

US Army Corps
of Engineers
Savannah District

Fort Bragg North Carolina

Solicitation Number

DACA21-03-R-0024

SOF Weapons Storage and Training Facility

FY-03, Line Item 43908

Volume III of III - Appendices F through L

April 2003

**THIS SOLICITATION IS UNRESTRICTED PURSUANT TO THE
"BUSINESS OPPORTUNITY DEVELOPMENT REFORM ACT OF 1988"
(PUBLIC LAW 100-656)**

**U.S. ARMY ENGINEER DISTRICT, SAVANNAH
CORPS OF ENGINEERS
100 WEST OGLETHORPE AVENUE
SAVANNAH, GEORGIA 31401-3640**

APPENDIX F

COMPREHENSIVE INTERIOR DESIGN (CID) REQUIREMENTS

The preparation of the Comprehensive Interior Design is part of the Base Bid. The procurement of the items specified in the Comprehensive Interior Design will be accomplished separate from this contract. The installation of these items will be an Option to the Base Bid as indicated in the Bidding Schedule. If awarded, the Contractor shall install the modular office furniture and other items listed in the Contractor-prepared CID. The furniture shall be coordinated with the prepared and approved Furniture Placement drawings developed in the SID package. Installation shall include scheduling shipments from vendors, accepting delivery at the site, unloading, inventorying, securing and installing the items.

The CID shall involve all the furniture-related components necessary to complete the interior environment. The necessary components shall include all loose furniture/furnishings/artwork. Refer to Section 01010, paragraph 23 (Comprehensive Interior Design) and Appendix D, Functional Room Requirements for additional criteria. Refer to enlarged plans in Appendix E for furniture location. The following information represents the known and required equipment items to be included in the Contractor-prepared CID.

Line Item	Nomenclature	Vendor/Mfr	Qty	Function/ Location	Cost (1ea)	Dimension (WxLxH)	Remarks	Line Item
	Workstation	n/a	2	Machine Shop (M-112)	n/a	8' x 8' L-Shaped Cubicle	Durable materials for Industrial use	
	Workstation	n/a	2	Org. Maintenance (M-127)	n/a	8' x 8' L-Shaped Cubicle	Durable materials for Industrial use	
	Workstation	n/a	2	X-Ray (M-121)	n/a	8' x 8' L-Shaped Cubicle	Durable materials for Industrial use	
	Workstation	n/a	1	Magnetic (M-119)	n/a	8' x 8' L-Shaped Cubicle	Durable materials for Industrial use	
	Workstation	n/a	2	Heavy Weapons (M-133)	n/a	8' x 8' L-Shaped Cubicle	Durable materials for Industrial use	
	Workstation	n/a	6	Stock Room (M-135)	n/a	8' x 8' L-Shaped Cubicle	Durable materials for Industrial use	
	Workstation	n/a	2	Light Weapons (M-136)	n/a	8' x 8' L-Shaped Cubicle	Durable materials for Industrial use	
	Workstation	n/a	13	Instructor Admin (T-114)	n/a	8' x 8' L-Shaped Cubicle	Durable materials	
	Workstation	n/a	1	Office (T-115)	n/a		Workstation for enclosed office	
	Workstation	n/a	1	Office (T-116)	n/a		Workstation for enclosed office	
	Workstation	n/a	1	Office (T-117)	n/a		Workstation for enclosed office	
	Workstation	n/a	1	Office (T-118)	n/a		Workstation for enclosed office	
	Workstation	n/a	1	Office (M-105)	n/a		Workstation for enclosed office	

Line Item	Nomenclature	Vendor/Mfr	Qty	Function/ Location	Cost (1ea)	Dimension (WxLxH)	Remarks	Line Item
	Workstation	n/a	1	Office (M-106)	n/a		Workstation for enclosed office	
	Workstation	n/a	1	Office (M-109)	n/a		Workstation for enclosed office	
	Workstation	n/a	1	Office (I-102)	n/a		Workstation for enclosed office	
	QC Workstation	n/a	1	Vestibule (T-101)	n/a		Movable receptionist style desk	
	Task chairs	n/a	2	Machine Shop (M-112)	n/a		Durable materials for Industrial use	
	Task chairs	n/a	2	Org. Maintenance (M-127)	n/a		Durable materials for Industrial use	
	Task chairs	n/a	2	X-Ray (M-121)	n/a		Durable materials for Industrial use	
	Task chairs	n/a	1	Magnetic (M-119)	n/a		Durable materials for Industrial use	
	Task chairs	n/a	2	Heavy Weapons (M-133)	n/a		Durable materials for Industrial use	
	Task chairs	n/a	6	Stock Room (M-135)	n/a		Durable materials for Industrial use	
	Task chairs	n/a	2	Light Weapons (M-136)	n/a		Durable materials for Industrial use	
	Task chairs	n/a	1	Vestibule (T-101)	n/a		Durable materials for Industrial use	
	Task chairs	n/a	15	Classroom (T-107)	n/a		Durable materials for classroom use	
	Task chairs	n/a	40	Classroom (T-120)	n/a		Durable materials for classroom use	
	Task chairs	n/a	40	Classroom (T-121)	n/a		Durable materials for classroom use	

Line Item	Nomenclature	Vendor/Mfr	Qty	Function/ Location	Cost (1ea)	Dimension (WxLxH)	Remarks	Line Item
	Task chairs	n/a	41	Classroom (T-122)	n/a		Durable materials for classroom use	
	Task chairs	n/a	13	Instructor Admin (T-114)	n/a		Durable materials	
	Task chairs	n/a	3	Office (T-115)	n/a		Durable materials	
	Task chairs	n/a	3	Office (T-116)	n/a		Durable materials	
	Task chairs	n/a	3	Office (T-117)	n/a		Durable materials	
	Task chairs	n/a	3	Office (T-118)	n/a		Durable materials	
	Task chairs	n/a	1	Office (M-106)	n/a		Durable materials	
	Task chairs	n/a	1	Office (M-106)	n/a		Durable materials	
	Task chairs	n/a	1	Office (M-109)	n/a		Durable materials	
	Task chairs	n/a	3	Office (I-102)	n/a		Durable materials	
	Tables	n/a	12	Break (M-130)	n/a	2' x 3' tables	Break room tables (lounge)	
	Tables	n/a	18	Break (T-106)	n/a	2' x 3' tables	Break room tables (lounge)	
	Chairs	n/a	24	Break (M-130)	n/a		Break room chairs (lounge)	
	Chairs	n/a	36	Break (T-106)	n/a		Break room chairs (lounge)	

Line Item	Nomenclature	Vendor/Mfr	Qty	Function/ Location	Cost (1ea)	Dimension (WxLxH)	Remarks	Line Item
	Mobile Cart	n/a	1	Simulator Room	n/a	3' x 6'	Coordinate size of cart with Simulator equipment in this room.	
	Conference table	n/a	1	Conference Room (M-110)	n/a	5' x 18' or similar	Room to seat min. 36 persons. Not all to sit at Conference Table.	
	Conference table	n/a	1	Conference Room (T-112)	n/a	5' x 18' or simialr	Room to seat min. 30 persons. Not all to sit at Conference Table.	
	Conference table	n/a	1	Instructor Admin (T-114)	n/a	5' x 18' or simialr	Table to seat min. 20 persons.	
	Conference chairs	n/a	36	Conference Room (M-110)	n/a			
	Conference chairs	n/a	30	Conference Room (T-112)	n/a			
	Conference chairs	n/a	20	Instructor Admin (T-114)	n/a			
	Light work table	n/a	40	Classroom (T-120)	n/a	3' x 4'	Similar to tables used in Armament Center (see line item 48 App E)	
	Light work table	n/a	40	Classroom (T-121)	n/a	3' x 4'	Similar to tables used in Armament Center (see line item 48 App E)	
	Light work table	n/a	41	Classroom (T-122)	n/a	3' x 4'	Similar to tables used in Armament Center (see line item 48 App E)	
	Lockers	n/a	20	Instructor Admin (T-114)	n/a	2' x 2'	7' tall lockers for TA-50 Gear	
	Computer table	n/a	15	Classroom (T-107)	n/a	3' x 5'	Computer workstations or desks	
	General wall cabinet	n/a	2	Instructor Admin (T-114)	n/a	5' x 2' x 6'		
	Book cases	n/a	2	Instructor Admin (T-114)	n/a	4' x 18" x 6'		

APPENDIX G

STRUCTURAL INTERIOR DESIGN (SID) REQUIREMENTS

The Structural Interior Design (SID) shall involve the selection and sampling of all applied building related finishes necessary to complete the buildings interior and exterior architecture. The preparation and procurement of the Structural Interior Design are part of the Base Bid. Refer to Section 01010, paragraph 22 (Interior Design) for additional criteria. The following information represents the approved Exterior Color Selections and Site Elements Color Standards for the SOF Weapons Training Facility. All exterior colors must be approved by the Architectural Review Board during construction.

AFZA-PW-C

EXTERIOR COLOR SELECTION

25 JUNE 2002

All colors refer to Federal Standard Colors 595b.

- (x) Wall/ Siding - brick – Palmetto 1.25 Greystone, cast concrete 23617, or earthtone split-face CMU, standard gray mortar. Accents may be used which are similar, for instance Palmetto 1.5 as a dark accent. (X) Columns – match above
- (x) Lintels – cast stone or masonry, match wall
- (x) Calking/ Sealant at expansion joints - match wall color
- (x) Trim - match 23617
- (x) Window - bronze 24084 –bronze
- (x) Window glass – dark bronze, non-reflective.
- (x) Sealant at windows - 24084
- (x) Personnel (Entrance) Doors and frame – dark bronze
- (x) Equipment/Access doors and frame – match wall or 20059
- (x) Overhead Doors and frame - 20059
- (x) Storefront – dark bronze
- (x) Handrails-dark bronze
- (x) Under roof overhangs (Soffits) 23617
- (x) Stairs and loading docks – dark bronze
- (x) Bollards –brown 20059. At loading docks and vehicle intensive areas use brown and yellow 13655. Yellow is at 45 deg. 3” stripes
- (x) Awnings/ Shutters - 20059
- (x) Louvers- match wall
- (x) Shingles/ Roofing – Weathered Gray by GAF if shingles, and medium bronze if metal.
- (x) Fascia- dark bronze
- (x) Rake flashing – dark bronze
- (x) Exposed flashing – dark bronze
- (x) Roof mounted equipment- match roof or if silhouetted against sky, medium grey - 26521
- (x) Gutters- dark bronze
- (x) Downspouts- Light Stone - match wall
- (x) Objects on wall - match wall
- (x) Exterior wall mounted Lights – 24084 – dark bronze
- (x) Ground mounted equipment - 20059
- (x) Caulking and sealants at windows or other
- (x) Site elements color selections – see below

PWBC

SITE ELEMENTS COLOR STANDARDS

4 JUNE 1999

All colors refer to Federal Standard Colors 595b. COLORS FOR BUILDINGS, UTILITY BUILDINGS, AND CONEXES ARE NOT ADDRESSED IN THIS STANDARD.

SIGNS

Street sign posts and backs.....dark brown....20059
Unit and organizational sign backs and posts..20059
Redwood signs.....Cabot stain #0534 Mission Brown
Monument signs on masonry bases.....bronze.....24084

FENCES

Wood..... Cabot stain #0534. Mission Brown
Dumpster enclosures.....Mission Brown
Equipment enclosures.....Mission Brown
Privacy fences.....Mission Brown
If a fence has been painted, it should be painted
Color No. 20059 with acrylic latex.

WROUGHT IRON FENCING - bronze.....24084

HANDRAILS, postwide, where attached to buildings - bronze....24084
postwide, free standing not attached to buildings -Mission Brown... 20059

EQUIPMENT

Traffic Signal control boxes.....20059
Bike racks.....20059
Dumpsters.....20059
PT equipment.....20059
Fire hydrants, post indicator valves, transformers,
HVAC units, telephone cabinets, gas meters and other
objects out away from buildings in yards.....dark brown.....20059

BOLLARDS -Type I, high visibility - 20059
TYPE II, industrial - mission brown(20059) and yellow(23655)
3" diagonal striped

PETROLEUM STORAGE TANKS, generators
beige.....23617

SCULPTURE

Tanks, cannon, statues etc.....bronze....24084

PORTOLETS.....beige.....23617

FLAG POLES AND EXTERIOR LIGHT POLES

Main post, general.....bronze.....24084

Main post parade field..... white.....17925

Other parts of post, match the trim on the building,
either natural aluminum or bronze.

APPENDIX H

ADDITIONAL SITE DESIGN CRITERIA

Contents:

- Part 1: Geotechnical Recommendations
- Part 2: Redundant Primary System
- Part 3: Telecommunications Duct Line Extension
- Part 4: Fire Flow Test
- Part 5: Pecolation Tests
- Part 6: Environmental Analysis
- Part 7: Existing Caswell Road Range I-40 Trailer
- Part 8: Seismic Study Results
- Part 9: Asbestos and Lead Based Paints Survey

APPENDIX H – PART 1

GEOTECHNICAL RECOMMENDATIONS

APPENDIX H - PART 1
SUBSURFACE EXPLORATION
AND
GEOTECHNICAL ENGINEERING REPORT
(PRELIMINARY)

SOF WEAPONS TRAINING FACILITY
L.I. 43908, FY-03
Fort Bragg, North Carolina



By
Soils Section
Geotechnical & HTRW Branch
U.S. Army Engineer District, Savannah

16 April 2003

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APPENDIX

One-Point and Two-Point Compaction Methods

SUBSURFACE EXPLORATION AND
GEOTECHNICAL ENGINEERING REPORT
(PRELIMINARY)

SOF WEAPONS TRAINING FACILITY
L.I. 43908, FY-03
Fort Bragg, North Carolina

16 April 2003

1. PURPOSE. The Government has conducted a preliminary geotechnical investigation for the proposed project. This report provides an overview of the site conditions, including subsurface soil and groundwater conditions, and preliminary recommendations pertaining to the geotechnical design and construction of the project.

2. QUALIFICATION OF REPORT. The field explorations performed for this report were made to determine the subsurface soil and groundwater conditions and were not intended to serve as an assessment of site environmental conditions. No effort was made to define, delineate, or designate any areas of environmental concern or of contamination. Any recommendations regarding drainage and earthwork construction are made on the basis that such work can be performed in accordance with applicable laws pertaining to environmental contamination.

3. PROJECT DESCRIPTION. The scope of work includes the design, site preparation and construction of a new one story 73,500 square foot Weapons Maintenance and Training Facility and a new one story 2,500 square foot Weapons Supplies Handling Facility.

Weapons Maintenance and Training Facility: The new multi-functional Weapons Storage and Maintenance Facility (WSMF) consists of an armament and weapons training center. The armament center includes weapons issue/turn-in/cleaning, organizational shop, light weapons shop, heavy weapons shop, weapons parts/supply room, national match shop, optical, chemical, refinishing shop, bluing shop, weapons storage vault, dock and receiving area, air defense artillery (ADA) and anti-tank (AT) simulator systems, storage, maintenance and roof top deck , platform for ADA trajectory tracking, and indoor test firing range. The weapons training center includes classrooms, instructional preparation space for instructors, offices, and support spaces. Supporting facilities will include fire protection system, information systems, electrical systems, concrete tank crossings, and other site improvements.

Approximately 73,500 square feet of area is required to construct the single story multi-functional weapons storage and maintenance facility (WSMF). The project includes expansion of Chicken Road and MacRidge Road by adding turning lanes and a traffic signal, a driveway with reinforced concrete for heavy vehicle travel, a perimeter security fence with access gate, separate and secure parking areas for staff and instructor/student vehicles, and a secure loading dock area. The anticipated maximum foundation column load in the Weapons Training and Maintenance Facility is approximately 80 kips.

Weapons Supplies Handling Facility: The 2500 square foot Weapons Supplies Handling Facility is a detached building that provides screening and inspection of all deliveries (i.e. weapons, equipment, supplies, and parts) and delivery vehicles to the Armament Center and Weapons Training Center. The building consists of a loading dock, large indoor and outdoor temporary holding areas, and support offices.

An 8-inch thick blast resistant reinforced concrete wall or reinforced masonry wall will be used at the face of the facility facing the handling facility. The roof will be 4-inch thick reinforced concrete. The anticipated maximum foundation load on the strip footings of the Weapon Supplies Handling Facility is one kip per foot.

4. EXPLORATION PROCEDURES.

a. Site Reconnaissance. Prior to the field exploration, the site and surrounding areas were visually inspected by a geotechnical engineer. The observations were used in planning the exploration, in determining areas of special interest, and in relating site conditions to known geologic conditions in the area.

b. Field Exploration.

(1) Subsurface conditions at the project site were explored by nine soil test borings (designated B-2 through B-15, excluding borings B-1, B-3, B-5, B-8, B-10 and B-12) drilled at the approximate locations shown on the grading and drainage plan included in the drawings with this RFP. Depths of the borings ranged from 5 to 25 feet below existing ground surface.

(2) Boring locations were established in the field by an engineer by measuring distances and estimating right angles from existing roads, fences, and other features. Since the measurements were not precise, the locations shown on the boring location plan should be considered approximate.

(3) Froehling & Robertson, Inc. (F&R), under contract to the Savannah District, drilled the borings utilizing the Standard Penetration Test (SPT). The borings were drilled with an ATV-mounted CME 550 drill rig; a 2¼-inch I.D. hollow-stem auger was used to advance the boreholes. Soil sampling and Standard Penetration Testing (SPT) were in substantial accordance with ASTM D 1586. In the Standard Penetration Test (SPT), a soil sample is obtained with a standard 1½ inch I.D. by 2 inches O.D. split-barrel sampler. The sampler is first seated 6 inches and then driven an additional 12 inches with blows from a 140 pound hammer falling a distance of 30 inches. The number of blows required to drive the sampler the final 12 inches is recorded and is termed the “standard penetration resistance”, or the “N-value”. Penetration resistance, when properly evaluated, is an index of the soil’s strength, density, and foundation support capability.

(4) Representative portions of the soil samples taken in the field were sealed in airtight containers and transported to the driller’s laboratory where they were examined by an engineer to confirm the driller’s field classifications. Classification of the soil samples was performed in general accordance with ASTM D 2488 (Visual-Manual Procedure for Description of Soils). The soil classifications include the use of the Unified Soil Classification System described in ASTM D 2487 (Classification of Soils for Engineering Purposes). Since the soil

descriptions and classifications are based on visual examination, they should be considered approximate, except where samples were subjected to laboratory testing, as described below.

(5) Soil boring logs graphically depicting soil descriptions, standard penetration resistances, and observed groundwater levels are shown on the drawings with this RFP.

c. Laboratory Soils Testing. Twelve of the samples were selected for grain-size distribution and/or Atterberg limits testing. The purpose of the laboratory testing was to aid in our evaluation of the subsurface soils and in confirming the field classifications. The laboratory tests were performed in substantial accordance with applicable ASTM standards. Results of the laboratory testing are shown on the drawings included with this RFP.

d. Soil Percolation Testing. Four percolation tests were performed at the project site. For percolation test results, refer to Appendix H, Part 5 of this RFP.

5. SITE AND SUBSURFACE CONDITIONS.

a. Site Description

The project site is located in the MacRidge Training Area immediately southeast of the intersection of MacRidge Road and Chicken Road. The site is wooded and undeveloped with only electrical and water utilities present. The ground elevations at the proposed SOF Weapon Training and Maintenance Facility site varies from 283 feet to 298 feet and the finished floor elevation is at 298 feet. Therefore, maximum anticipated fill will be approximately 15 feet. The ground elevations at the proposed Weapons Supplies Handling Facility site varies from 283 feet to 285 feet and the finished floor elevation is at 290 feet. Therefore, maximum anticipated fill will be approximately 7 feet. The ground elevation of the proposed student parking, which is located adjacent to the SOF Weapon Training and Maintenance Facility varies from elevation 296 feet to 290 feet and the top elevation of the proposed pavement varies from 294.7 feet to 288.7 feet. Therefore, a maximum cut of about 2 feet may be anticipated in the existing grade where the student parking is proposed.

b. Area and Site Geology.

Fort Bragg is situated in the Sand Hills area of the Coastal Plain physiographic province of North Carolina. The Coastal Plain extends westward from the Atlantic Ocean to the Fall Line, a distance of about 130 miles. The Fall Line is the boundary between the Coastal Plain and the Piedmont physiographic provinces. Geologic units in the area, ranging from oldest to youngest, include the Carolina Slate Belt rocks, which comprise the basement rock, the Cape Fear Formation, and the Middendorf Formation. The Cape Fear and Middendorf Formations overlie the basement rock and are part of the generally southeastward-dipping and thickening wedge of sediments that constitute the Atlantic Coastal Plain deposits. The Middendorf Formation is exposed at land surface throughout the area. The formation is composed of tan, cross-bedded, medium- and fine-grained, micaceous quartz sand and clayey sand interbedded with clay or sandy clay lenses or layers. Layers of hematite-cemented sandstone occur locally throughout the Middendorf Formation as do thin layers of hard kaolin and kaolin-cemented sandstone. Below

the water table, these units are generally friable or plastic. In places, the Middendorf Formation is a mottled orange, gray, and tan color with streaks and laminae of red and purple hematite and manganese oxide stains.

c. Subsurface Conditions.

(1) The natural in situ soils encountered in the soil borings drilled at the project site are typical coastal plain sediments. Topsoil was encountered in the grassed areas and varied in thickness from 2 inches to 4 inches. Below the topsoil, the surface of the site is mantled predominantly by poorly graded sand SM (exception of boring B-7) commonly very loose to loose (N- values of 2 to 5 blows per foot). Below the mantle of sand, interbedded layers of clayey silt and/or poorly graded sands were encountered to the termination depths of the borings. Based on the Unified Soil Classification System, these soils are classified as MH, CH, CL, ML and SC. The standard penetration resistances, or N-values, for these soils range from 6 to 28 blows per foot in the cohesive soil materials, and 13 to 23 in the cohesionless materials. This indicates medium stiff to very stiff consistency in the clay materials, and medium dense sandy materials.

(2) The above subsurface descriptions are of a generalized nature to highlight the major subsurface stratification features and material characteristics. The boring logs shown on the drawings should be reviewed for specific information at individual boring locations. The stratifications shown on the boring logs represent the conditions only at the actual boring locations. Variations may occur and should be expected between boring locations. The stratifications represent the approximate boundary between the subsurface materials; the actual transition may be gradual.

d. Groundwater Conditions

(1) Water levels were measured in the borings at termination of drilling and again at 24 hours after completion of drilling. No ground water was encountered in any of the soil borings.

(2) Absence of groundwater data does not necessarily mean that groundwater will not be encountered at the locations of the borings. Groundwater levels will fluctuate with seasonal and climatic variations, variations in subsurface soil conditions, and construction operations. Therefore, groundwater conditions in the future, and at other locations on the site, may differ from the conditions encountered at the boring locations, on the dates the borings were performed.

6. ENGINEERING EVALUATIONS AND RECOMMENDATIONS.

a. General. The following conclusions and recommendations are based on the information available on the proposed structures, observations made at the project site, interpretation of the data obtained from the soil test borings, and our experience with soils and subsurface conditions similar to those encountered at the site. Since the test borings represent a very small statistical sampling of the subsurface conditions, it is possible that subsurface conditions substantially different from those indicated by the test borings could be encountered during the construction. In such instances,

adjustments to the design and construction of the proposed structures might be necessary, depending on the actual conditions.

b. General Site Preparation.

(1) To prepare the site for construction, any debris should be removed from areas of the proposed structures and pavements. Then, the cleared areas should be grubbed and stripped of all vegetation, topsoil, roots and all organics, and other deleterious materials. Clean topsoil can be stockpiled and reused later in landscaped areas. It is recommended that the zone of stripping extend a minimum of 10 feet outside the outer edges of the structure. Any existing utilities in construction areas should be located and rerouted, as necessary.

(2) Areas to receive fill and excavated subgrade areas of buildings and pavements should be prepared as follows: Surface areas containing poorly graded sand and silty sand should be densified by compaction with a vibrating roller weighing at least 7 tons. Areas of cohesive soils such as clayey sands, silts and clays, should be proofrolled with a loaded tandem-axle dump truck or similar rubber-tired equipment. Soils which are observed to rut or deflect excessively under the moving load should be undercut to firm soil and backfilled with properly compacted, suitable soils. The proofrolling should be performed only during and following a period of dry weather.

c. Foundation Design and Construction.

(1) Given the proposed site and the proposed types of structures, it is our opinion that shallow spread foundations can be used for support of the proposed buildings.

(2) Footings should be supported on the natural in situ soils or on properly compacted structural fill. Column footings and load-bearing wall footings should have minimum dimensions of 30 and 24 inches, respectively, and should be located at a minimum depth of 24 inches below finish floor or finish grade, as appropriate. Non load-bearing wall footings should have a minimum width of 18 inches and should be located at a depth of 18 inches below finish floor or finish grade, as appropriate.

(3) Foundations can be supported on the firm to stiff highly plastic clays (CH and MH); however, extra measures should be taken to preserve the integrity of the bearing surface in such soils. The tendency to absorb water causes the soils to swell causing softening and deterioration.

(4) Foundation excavations should be concreted as soon as practical following excavation. Exposure to the environment could weaken the soils at the footing bearing level should the foundation excavations remain open for an extended period of time. Bottoms of foundation excavations should be inspected immediately prior to placement of reinforcing steel and concrete to verify that adequate bearing soils are present and that all debris, mud, and loose, frozen or water softened soils are removed. If the bearing surface soils have been softened by surface water intrusion or by exposure, the softened soils must be removed to firm bearing, and replaced with additional concrete during the concreting, or replaced to design subgrade with No. 57 or No. 67 stone, compacted to a non-yielding condition. To minimize the exposure, the final excavation (4 to 6 inches) to design subgrade could be delayed until just prior to placement of reinforcing steel and

concreting. Foundation excavations must be maintained in a drained/dewatered condition throughout the foundation construction process.

d. Site Classification for Seismic Design. The project site should be classified as Site Class D for the purpose of determining maximum considered earth spectral response accelerations S_{MS} and S_{MI} in accordance with “NEHRP” Recommended Provisions for Seismic Regulations for New Buildings and Other Structures,” 1997 Edition.

e. Concrete Slabs-On-Grade.

(1) Based upon our past experience and the subsurface conditions encountered at the site, concrete floor slabs can be supported on densified in situ soils or on fill soils placed and compacted in accordance with the recommendations presented in this report regarding structural fill. We recommend that all concrete slabs-on-grade in inhabitable areas, including storage areas, be underlain by a minimum of 4 inches of open graded, washed pea gravel, or stone, often termed “capillary water barrier,” to prevent the capillary rise of groundwater. Nos. 57, 67, 78, or 89 stone could be used. We also recommend that a moisture vapor barrier consisting of lapped polyethylene sheeting having a minimum thickness of 6 mils be provided beneath the building floor slabs to reduce the potential for slab dampness from soil moisture. Concrete slabs should be jointed around columns and along supported walls to minimize cracking due to possible differential movement.

(2) Construction activities and exposure to the environment often cause deterioration of the prepared slab-on-grade subgrade. Therefore, we recommend that the slab subgrade soil be inspected and evaluated immediately prior to floor slab construction. The evaluation might include a combination of visual observations, hand rod probing and field density tests to verify that the subgrade has been properly prepared. If unstable soil is revealed, the affected soil should be removed to firm bearing, and replaced to design subgrade with suitable structural fill soil placed and compacted as recommended, or replaced with additional capillary water barrier material.

f. Pavement Design. High plasticity clays and silts (CH and MH) are prevalent in the site subsoils, and it is probable they will be encountered in the subgrade of some of the pavement. These types of soils are poor as a subgrade material; they can have both high compressibility and expansion characteristics and are practically impervious. Also, the soils will deteriorate when exposed to water and/or construction equipment traffic. Should these materials be encountered at the finish subgrade elevations in areas of pavement, they should be undercut and replaced with properly compacted sandy soils. In lieu of excavation and replacement, lime or cement stabilization could be utilized to provide a satisfactory subgrade. Also, an increased thickness of base course material underlain by a separation geotextile could be used. The successful proposer shall be fully responsible for acceptable pavements.

g. Groundwater Considerations.

(1) “Perched water” conditions could be encountered, and the accumulation of run-off water or seepage at the base of excavations may occur during foundation construction and site work. Where seepage is encountered at shallow depths, pumping from filtered sumps and/or the use of perimeter trenches to collect and discharge the water away from the work area should be utilized.

(2) Water should not be allowed to collect near the foundation or on floor slab areas of the building either during or after construction. Undercut or excavated areas should be sloped toward one corner to facilitate removal of any collected rainwater, groundwater, or surface runoff. Positive site drainage should be provided to reduce infiltration of surface water around the perimeter of the building and beneath the floor slabs.

h. Structural Fill. In order to achieve high density structural fill, the following evaluations and recommendations are offered:

(1) Based on the soil test borings, excavated on-site soils (excluding any organics and debris) can be used as structural fill. Some moisture content adjustment will probably be necessary to achieve proper compaction. Due to the high plasticity of some of the clays and silts (CH and MH), increase and decrease of the moisture content in these soils may require considerable effort. Furthermore, excavation of these in situ soils generally produces chunks and clods. Considerable manipulation and working with disc harrows might be required to produce uniform moisture content and a fill material of uniform texture free of chunks and clods.

(2) We recommend that the contractor have appropriate disc harrows on site during earthwork for both drying and wetting the soils.

(3) Materials selected for use as structural fill should be free from roots and other organic matter, trash, debris, and frozen soil, and stones larger than 3 inches in any dimension. The following soils represented by their Unified Soil Classification System (ASTM D 2487) group symbols will be suitable for use as structural fill: GC, GM, SP, SW, SC, SM, CL, ML, (CH and MH on-site). The following soil types are considered unsuitable: Pt, OH, OL, GP, GW, (CH and MH borrow).

(4) Suitable fill soils should be placed in lifts of maximum 8 inches loose measurement. The soil should be compacted by mechanical means such as steel drum, sheepsfoot, tamping, or rubber-tired rollers. Compaction of clays is best accomplished with a sheepsfoot or tamping roller. Periodically rolling with heavily loaded, rubber-tired equipment may be desirable to seal the surface of the compacted fill, thus reducing the potential for absorption of surface water following a rain. This sealing operation is particularly important at the end of the workday and at the end of the week. Within confined areas or foundation excavations, we recommend the use of manually operated, internal combustion activated compactors ("wacker packers" or sled tamps). The compactors should have sufficient weight and striking power to produce the same degree of compaction that is obtained on the other portions of the fill by the rolling equipment as specified. Where hand operated equipment is used, the soils should be placed in lifts of maximum 4 inches loose measurement.

(5) We recommend the structural fill and subgrades be compacted to the following minimum percents of the modified Proctor maximum dry density (ASTM D 1557):

Beneath structures and building slabs, to 5 feet beyond building and structure line, around footings and in trenches	90 percent
--	------------

Beneath paved areas, except top 12 inches	90 percent
Beneath paved areas, top 12 inches	95 percent
Beneath sidewalks and grassed areas	85 percent

i. Construction Quality Control Testing.

(1) Prior to initiating any structural fill placement and/or compaction operations, we recommend that representative samples of the soils which will be used as structural fill or subgrade, both suitable on-site soils and off-site soils (borrow), be obtained and tested to determine their classification and compaction characteristics. The samples should be carefully selected to represent the full range of soil types to be used. The moisture content, maximum dry density, optimum moisture content, grain-size and plasticity characteristics should be determined. These tests are required to determine if the fill and subgrade soils are acceptable and for compaction quality control of the subgrades and structural fill. Tests for the above soil properties should be in accordance with the following:

Moisture Content	ASTM D 2216
Maximum Dry Density and Optimum Moisture	ASTM D 1557
Grain-Size (Wash No. 200, less hydrometer)	ASTM D 422 and D 1140
Plasticity	ASTM D 4318

(2) A representative number of in-place field density tests should be performed in the subgrade of compacted on-site soils and in the structural fill and backfill to confirm that the required degree of compaction has been obtained. In-place density tests should be performed in accordance with the sand cone method prescribed in ASTM D 1556. We recommend at least one density test be performed for each 6000 square feet, or portion thereof, of compacted existing on-site soils, subgrades, and in each lift of compacted structural fill. We also recommend that at least one density test be performed for each 100 linear feet in the bearing level soils of continuous footings. Density tests should be performed at 100-foot intervals along roadway subgrade soils. In addition, a density test should be performed for each 150 linear feet of backfill placed per foot of depth in trenches for utilities systems. Where other areas are compacted separately by manually operated compactors, a minimum of one density test should be performed for every 250 square feet, or portion thereof, of fill placed per foot of depth.

(3) Compaction control of soils requires the comparison of fill water content and dry density values obtained in the field density tests with optimum water content and maximum dry density. The performance of a laboratory compaction test on material from each field density test would provide the most accurate relation of the in-place material to optimum water content and maximum density, but it is not feasible to do this as the testing could not keep pace with fill construction. We recommend that compaction control of the earthwork construction be performed using a “family” of compaction curves and the one-point or two-point compaction methods. Excerpts from construction specifications, which describe the approach and its use, are included in the Appendices of the geotechnical report of this RFP.

(4) Any area that does not meet the required compaction criteria should be reworked, and retested. If the moisture content of the soil is within the recommended range, additional compaction may be all that is necessary to increase the density. If the moisture content is not within the recommended range, then, the moisture content should be adjusted to within the range, and the area recompact.

(5) All laboratory and field density testing should be performed by an approved commercial testing laboratory qualified in this type of work.

APPENDIX

One-Point and Two-Point Compaction Methods

Compaction Control

For fine grained (clayey and silty) soils and for sands with appreciable fines such that normal shaped compaction curves are obtained, results of all compaction tests shall be plotted on a common plot as a family of curves. For each field density test performed, a one-point compaction test, with additional points as needed, shall be performed on the same material on which the field density test was conducted. The one-point compaction test shall be performed on the dry side of the optimum moisture content. For comparison of field density data to the proper laboratory compaction test results, the procedures for the one-point and/or two-point compaction control methods as described in paragraph Compaction Procedure, shall be used. Compaction curves plotted on the family of curves shall be of such a scale that the optimum moisture content can be interpreted to the nearest 0.1 percent and the maximum dry density can be interpreted to the nearest 0.1 pcf(or 2 kg/m³). When a one-point test plots outside the range of the family of curves, an additional five-point compaction test shall be performed.

Compaction Procedure

General

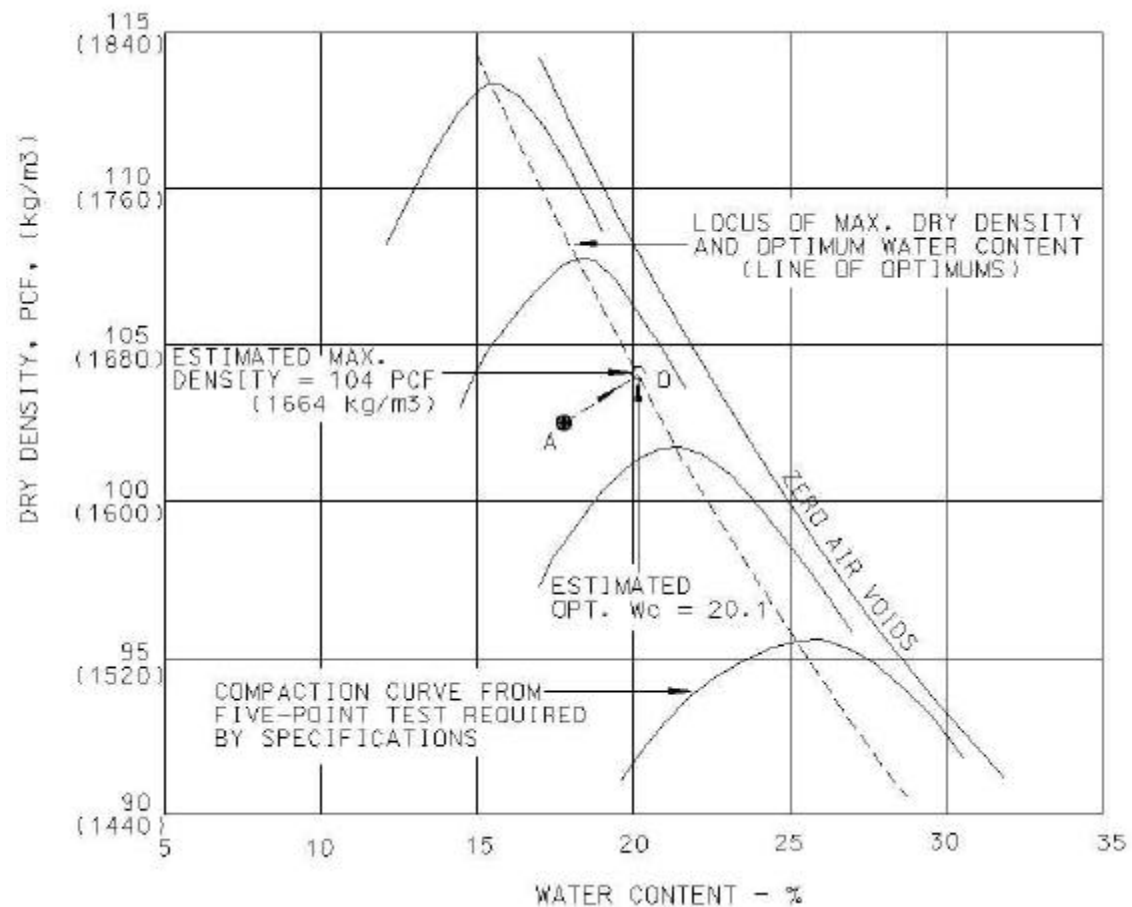
The following paragraphs describe methods of relating field density data to desired or specified values. Compaction control of soils requires comparison of fill water content and/or dry density values obtained in field density tests with optimum water content and/or maximum dry density. At a minimum, control shall be in accordance with the One-Point Compaction Method. Where conditions require, the Two-Point Compaction Method shall be used.

One-Point Compaction Method

The material from the field density test is allowed to dry to a water content on the dry side of estimated optimum, and then compacted using the same equipment and procedures used in the five-point compaction test. Thorough mixing is required to obtain uniform drying; otherwise, results obtained may be erroneous. The water content and dry density of the compacted sample are determined and then used to estimate its optimum water content and maximum dry density as illustrated in Figure 1 at the end of this section. In Figure 1, the line of optimums is well defined and the compaction curves are approximately parallel to each other, consequently, the one-point compaction method could be used with a relatively high degree of confidence. However, in Figure 2 at the end of this section, the curves are not parallel to each other and in several instances will cross if extended on the dry side. Consequently, the correct curve cannot be determined from the one-point method; therefore, the two-point compaction method should be used. The one-point method should be used only when the data define a relatively good line of optimums.

Two-Point Compaction Method

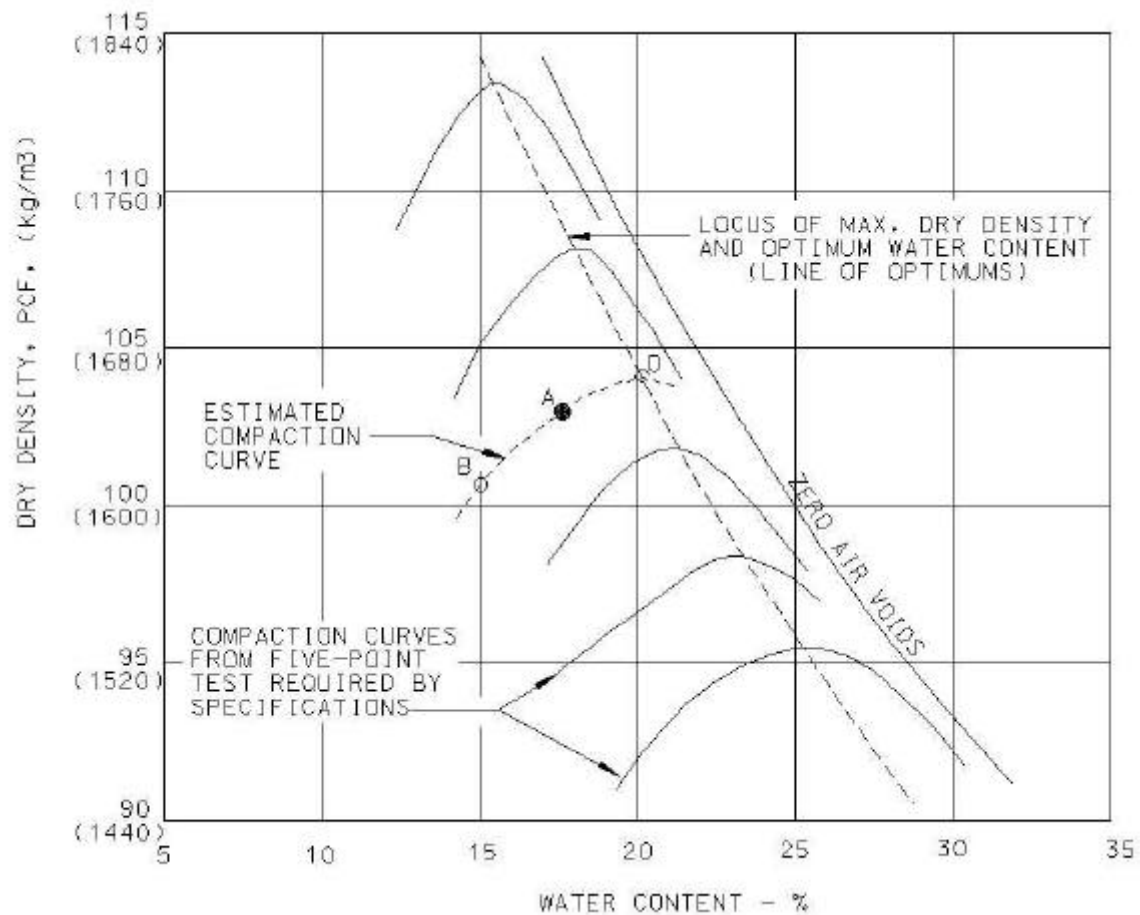
In the two-point test, one sample of material from the location of the field density test is compacted at the fill water content if thought to be at or on the dry side of optimum water content (otherwise, reduced by drying to this condition) using the same equipment and procedures used in the five-point compaction test. A second sample of material is allowed to dry back about 2 to 3 percentage points dry of the water content of the first sample and then compacted in the same manner. At least one point shall fall within 3 percent of the line of optimums. After compaction, the water contents and dry densities for the two samples are determined. The results are used to identify the appropriate compaction curve for the material being tested as shown in Figure 2 at the end of this section. The data shown in Figure 2 warrant the use of the two-point compaction test because the five-point compaction curves are not parallel. Using point A only, as in the one-point test method, would result in appreciable error as the shape of the curve would not be defined. The estimated compaction curve can be more accurately defined by two compaction points.



PROCEDURE:

1. Point A is the result of a one-point compaction test on material from field density test. This point must be on the dry side of optimum water content.
2. Point O is the estimated optimum water content and maximum density of the fill material based on a projection of point A approximately parallel to the adjacent compaction curves.
3. Point A must plot within 3 percent of the line of optimums.

Figure 1. Illustration of one-point compaction method.



PROCEDURE:

1. Points A and B are results of a two-point compaction test on material from field density test. Points A and B must be on the dry side of optimum water content.
2. The estimated compaction curve based on Points A and B establishes Point O on the locus, which is the estimated maximum dry density and optimum water content of the fill material.
3. One point must plot within 3 percent of the line of optimums.

Figure 2. Illustration of two-point compaction method.

PART 2: Redundant Primary System

APPENDIX H – PART 2

REDUNDANT PRIMARY SYSTEM

The redundant primary system shall be bid as two options. Two aerial primary circuits shall be extended onto the site to serve the new facility. The main circuit will be the existing circuit, circuit 4B that runs along Chicken road. Existing circuit 6A shall be extended from the intersection of Longstreet Road and McRidge Road to the new site as well. The two circuits shall provide a redundant primary system to the facility. The contractor is to verify existing conditions and provide a detailed scope of work and cost for the following 2 bid options:

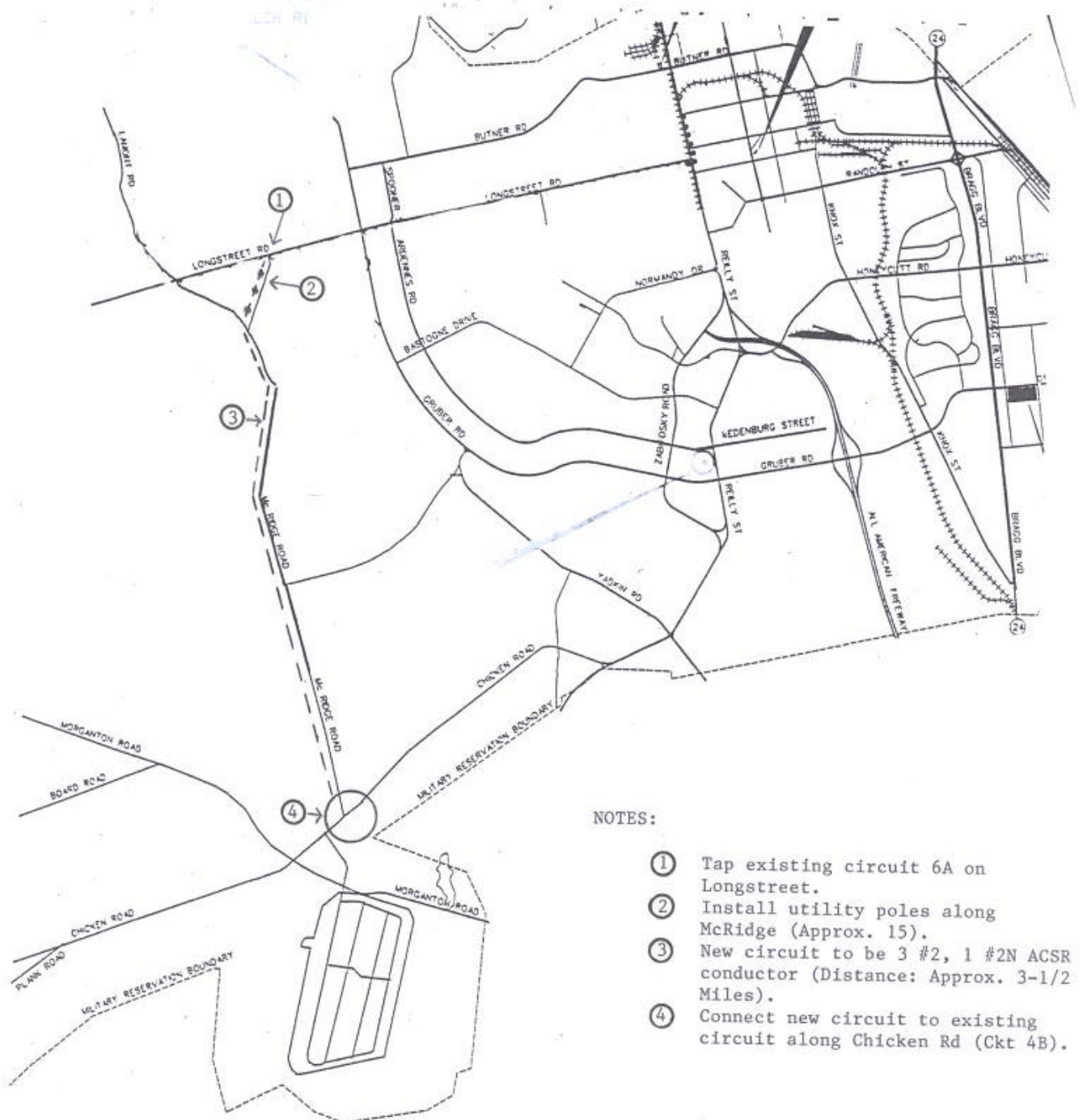
One option for the redundant primary system (option 5 as described in the base bid list) is to provide a completely underground system from the Longstreet Substation to the underground connection on Chicken Road. Fort Bragg's PWBC has established the preliminary cost for this work is approximately \$385,000.00.

The other option for the redundant primary system (option 6 as described in the base bid list) is to provide a completely overhead system with new power poles from the Longstreet Substation to McKenzie RD, and then utilizing existing power poles to just short of Chicken RD and going underground from there to the circuit connection. Fort Bragg's PWBC has established the required scope of work to extend circuit 6A to the site on the following image. Fort Bragg's PWBC has established the preliminary cost for this work is approximately \$268,000.00

***7**

In summary, Circuit 6A from Longstreet Sub will be serving the SOF Weapons Project PN 43908. In addition, a backfeed circuit from Longstreet Sub Circuit 4B will be installed along McRidge Rd. The present scope includes 3-#2, 1#2 N ACSR conductors for this new electrical distribution line along McRidge Road.

It is recommended by Sandhills to install conductor 3-336.4, 1-#4/0 N ACSR along the tie line between Circuits 4B to 6A. This will increase the current carrying abilities from approximately 190 Amps to 530 Amps per primary conductor and allow for sufficient backfeed to the SOF Weapons Bldg and other facilities along Circuit 4B from Circuit 6A and vice versa. The voltage for both circuits is 7,200/12,470 Volts.



**SOF Weapons Training Facility
Fort Bragg, North Carolina**

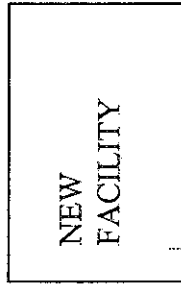
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**PART 3:
Telecommunications Duct Line Extension**

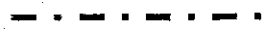
..... 2EA 4" CONDUITS

----- 4EA 4" CONDUITS

EV HUT



NEW
FACILITY



240'



600'



600'



600'



600'



100' WITH
40' BORE

100' WITH
40' BORE

100' WITH
40' BORE

CHICKEN ROAD



100' WITH
40' BORE

MCRIDGE ROAD

**SOF Weapons Training Facility
Fort Bragg, North Carolina**

DACA21-03-R-0024

PART 4: Fire Flow Tests

Fort Bragg Fire & Emergency Sv

Hydrant Flow Test By Hydrant

Hydrant Number = "X-0001"

Date	Static	Residual	Pitot	Pitot 2	GPM	20 PSI	10 PSI	0 PSI
X-0001	X-5878 Chicken RD				AD			
/29/02	110	70	72	0	1424	2206	2336	2459
4981	Whittington, Vancleef							
					Min:	1424	2206	2336 2459
Subtotal Flow Tests: 1					Max:	1424	2206	2336 2459
					Avg:	1424	2206	2336 2459
Total Flow Tests: 1								

6-3069

Fort Bragg Fire & Emergency Sv

Hydrant Flow Test By Hydrant

Hydrant Number = "O-0001"

Date	Static	Residual	Pitot	Pitot 2	GPM	20 PSI	10 PSI	0 PSI
-0001	Chicken RD & Macridge RD				AD			
6/6/02	100	68	60	0	1300	2132	2272	2405
981	Whittington, Vancleef							
				Min:	1300	2132	2272	2405
Subtotal Flow Tests: 1				Max:	1300	2132	2272	2405
				Avg:	1300	2132	2272	2405
Total Flow Tests: 1								

**SOF Weapons Training Facility
Fort Bragg, North Carolina**

DACA21-03-R-0024

PART 5: Percolation Tests



FROEHLING & ROBERTSON, INC.
GEOTECHNICAL • ENVIRONMENTAL • MATERIALS
ENGINEERS • LABORATORIES
"OVER ONE HUNDRED YEARS OF SERVICE"

P. O. Box 64276, Fayetteville, NC 28306
Phone (910) 323-9832 Fax (910) 323-5455

August 05, 2002

U.S. Army Corps of Engineers
Savannah District
CESAS-EN-G
100 West Oglethorpe.
Savannah, GA 31402

ATTENTION: Mr. Ben Foreman

Re: Soil Percolation Testing
SOF Weapons Training Facility
Fort Bragg, North Carolina
F&R Project Number D64-052

Gentlemen:

At your request representatives of Froehling & Robertson (F&R), Inc. visited the referenced project site on August 01 and 02, 2002. The purpose of these visits was to perform percolation tests in accordance with the documents that your office has provided to us. The documentation provided is a general site plan for the referenced proposed project, which indicated four locations of where testing was to be performed, and the testing requirement TM 5-814-3/AFM 88-11, Volume III, part d. percolation tests.

The referenced project area was located based on the information on the provided general site plan. The site is southeast of the intersection of MacRidge Road and Chicken Road on Fort Bragg, NC. There is also a well-defined tank trail that is between the site and Chicken Road, which was used as a datum for the location of the test areas. The test areas were located in the field by scaling their distances from the plan and then by pacing distances from known existing points shown on the plan and estimating right angles. At the time of this testing the site was generally covered with trees, brush and some undergrowth and was generally level with the exception of the eastern portion of the site.

The testing was performed with a 4-inch diameter hand auger that was used to extend the test holes to a depth of 36 inches, as directed. All measurements were taken from a fixed datum at the top of the holes with a carpenter's tape measure. The testing was performed in general conformance to the directions of the testing procedure provided. An approximate 2-inch layer of gravel was placed in each test hole followed by a minimum depth of 12 inches of water above the gravel. The water was left in the holes overnight and was then revisited 24 hours later. At the end of the 24 hours water was not evident in any of the holes with the exception of about 1 inch of water in hole 1. All holes were refilled with 6 inches of water above the gravel. All 4 holes had no water after 30 minutes. Testing was then performed in accordance with the procedure in paragraph 4 part (c) with measurements of the water surface drop being recorded every 10 minutes. The measurements of water surface drop are provided in tabular form below.

HEADQUARTERS: 3015 DUMBARTON ROAD • BOX 27524 • RICHMOND, VA 23261-7524
TELEPHONE (804) 284-2701 • FAX (804) 284-1202 • www.FandR.com

BRANCHES: ASHEVILLE, NC • BALTIMORE, MD • CHARLOTTE, NC • CHESAPEAKE, VA
CROZET, VA • FAYETTEVILLE, NC • FREDERICKSBURG, VA
GREENVILLE, SC • RALEIGH, NC • ROANOKE, VA • STERLING, VA



Page 2

Test Hole	Water Level Drop per 10-minute interval in inches								
	(interval)	1	2	3	4	5	6	AVG	t(avg) Q
1		1.0	1.0	1.0	1.5	2.0	2.0	1.4	7.1 1.9
2		2.0	1.5	1.5	2.0	1.5	1.5	1.7	5.9 2.1
3		2.0	1.5	1.0	1.0	1.5	2.0	1.5	6.7 1.9
4		1.5	1.5	1.0	1.0	1.5	1.5	1.3	7.7 1.8

Q is in gallons per day per square foot of absorption area

F&R appreciates the opportunity to be of service on this project. If you have questions or comments regarding this report please contact us at your earliest opportunity.

Sincerely,

Froehling & Robertson, Inc.

Laurence F. Lindsey, P.E.

Fayetteville Branch Manager

Facility

* Sof Weapons Training Facility

* Ben Foreman

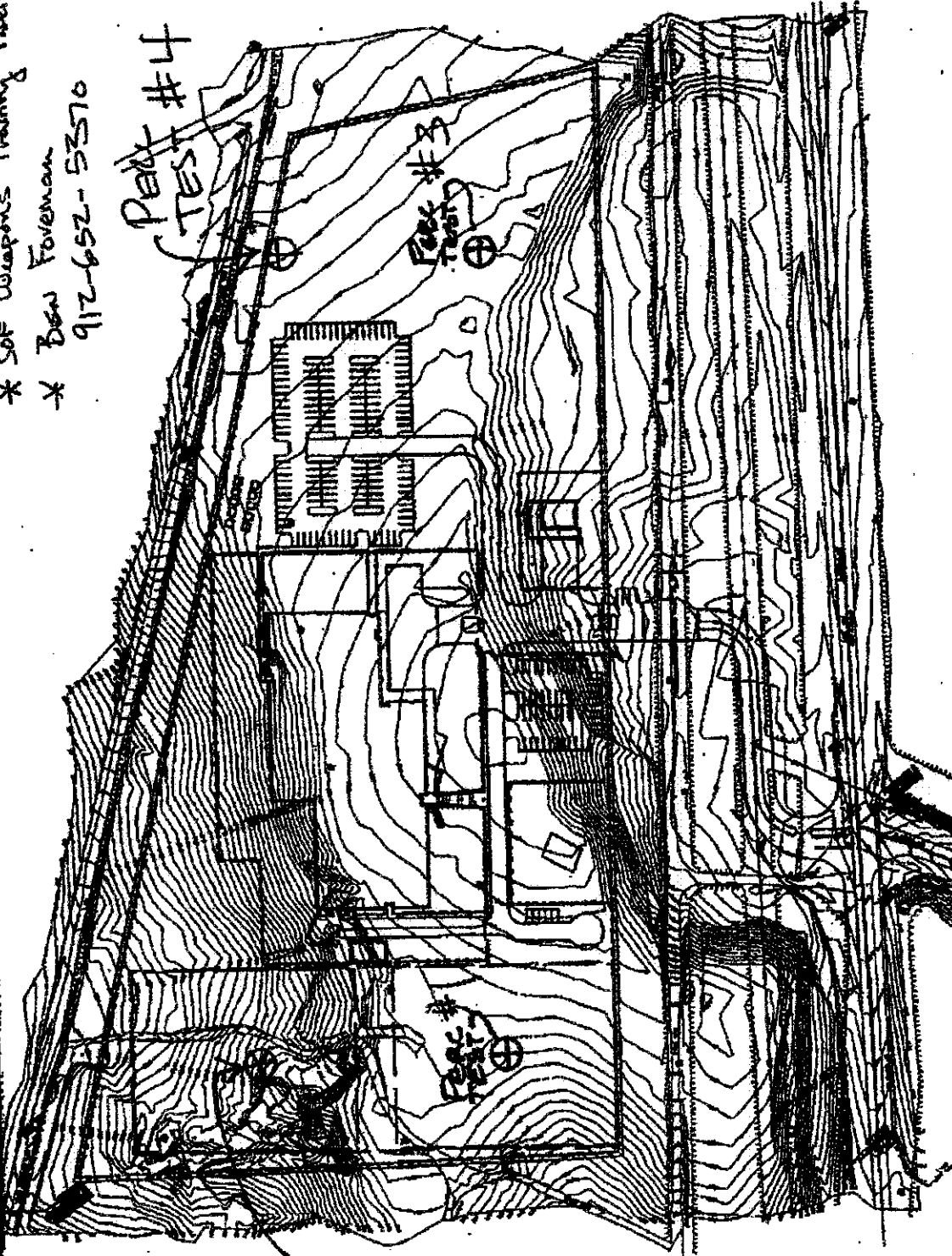
912-652-5370

Pack #4
TEST

Pack #3
TEST

Pack #2
TEST

Pack #2
TEST



PART 6: Environmental Analysis

APPENDIX H – PART 6
ENVIRONMETAL ANALYSIS

Refer to section 01010 paragraph 11.2.

PART 7:
Existing Caswell Road Range I-40 Trailer

CASWELL
DETROIT ARMOR
COMPANIES

Road Range I-48

Unit includes: See drawing 13-4437

Standard over the road trailer, 48' x 102"

Ballistics for 22 cal. rimfire rifles & handguns

Sound and heat insulation package

Range ventilation system meeting OSHA requirements using
HEPA filtration

Target & general lighting package

Air conditioner/Heater, 10,000 BTU

Environmental GranTrap bullet trap

Shooting stanchions with shelf

Handcrank trolley wire target system

Master Controls for Lighting/Ventilation systems

Freight to your site

Setup and training

Price F.O.B. your dock (48 states)
\$136,965.00

Terms:
RR I-48

Delivery:

11116

wall of the receiver. Replace the barrel and lock it. Close the feed cover.

Accessories

The largest accessory is the tripod which although primarily designed for general use, can be quickly adapted for anti-aircraft fire.

Belt boxes for 100-, 200- and 250-round belts are issued. The 100-round box can be attached to the underside of the PK for the assault role.

Spare parts and the usual combination tool and the oil-solvent container are carried.

DATA

PKS

Cartridge: 7.62 mm x 54R

Operation: gas, automatic

Method of locking: rotating bolt

Feed: belt; 100, 200 and 250 rounds

MECHANICAL FEATURES

Barrel: (bore) chromium plated; (regulator) 3 position; (cooling) air. Quick-change barrel

Sights: (foresight) cylindrical post; (rearsight) vertical leaf. Windage scale

FIRING CHARACTERISTICS

Muzzle velocity: 825 m/s

Rate of fire: (cyclic) 690-720 rounds/minute

Effective range: 1000 m

Manufacturer

State factories

Status

Current Production

Service

Soviet and allied armies

7.62 mm PKT light machine gun

12.7 mm Degtyarev (DShK-38 and Model 38/46) heavy machine gun

The DShK-38 was designed by Degtyarev and was based on an earlier model of his, the DK, which was produced in very limited numbers in 1934. The feed was designed by G S Shpagin and was a rotary type in which the rounds in the belt were successively removed from the links and then fed through a feed plate and collected by the bolt in its forward travel. This was a complicated process and required skill and training if stoppages were to be avoided.

In 1946 the rotary feed was replaced by the conventional shuttle-type feed used on the Degtyarev Model RP-46. This difference produces a ready

recognition feature as the DShK-38 has the large circular drum-like feed mechanism and the Degtyarev Model 38/46 has a flat rectangular feed cover. There is no interchangeability between the parts of the two guns.

The 12.7 mm guns have been used extensively by Soviet-influenced European and Asian countries. The European countries who originally used the gun on a tripod now fit it into a number of vehicles for anti-aircraft and anti-vehicle duties. It is still used on the ground mount by Asian countries. The Chinese version is a copy of the Model 38/46 known as the Type 54 heavy

machine gun and can be identified by the Chinese characters on the receiver behind the feeder. The Czechoslovaks make a towed four-gun anti-aircraft assembly.

The DShK-38 feeds from the left and has a fixed barrel. The Model 38/46 can readily be adapted for feed from either side, by changing some parts in the feed mechanism, and it has a quick-change barrel.

Operation

The belt is a continuous metallic-link type holding 50 rounds. Each link takes a cartridge which is located by the nib on the belt entering the groove of the cartridge.

The cover latch of the DShK-38 is at the rear of the cover and it permits the cover to be rotated about the hinge at the front.

The belt is placed in the gun from the left with the first link under the link stripper and the first cartridge in the top compartment of the rotating feed drum. The weight of the ammunition is taken off the feed drum and the ammunition and drum pushed round through some 120°. When the drum will rotate no further the feed cover is closed. The cocking handle between the slide grips is retracted and the slide held to the rear on the sear. The compartments of the rotating feed drum are now full and the first round is pressed through the feed plate into the path of the bolt.

The Model 38/46 should be regarded as a large version of the RP-46. The belt tab is inserted into the feed guide and pulled through until the first round passes over the stop pawl which will prevent it from falling out. When the cocking handle is fully retracted the gun is ready to fire.

When the trigger is pressed it raises the rear end of the sear release lever which pivots and forces down the sear out of engagement with the slide. The compressed return spring drives the slide and bolt forward. The feed nib on the bolt passes under the feed drum of the DShK-38 and picks up the round which is projecting through the feed plate. In the Model 38/46 the round is held up to the catch stop. The round is pushed forward and into the chamber. The extractor grips into the cannellure at the base of the cartridge and the bolt comes to rest. On each side of the bolt is a long locking lug which is pivoted at the front end into a recess in the side of the bolt and opens out from the bolt at the rear end, like a flap, as the firing pin, which is attached to the slide, drives forward. The projecting lugs are cammed out by shoulders on the firing pin and engage in recesses in the side walls of the receiver. The firing pin goes in a further 16 mm after locking is completed and the cap is fired.

Some of the propellant gases are diverted into the cylinder and drive the piston back. The slide carrying the firing pin is retracted and there is about 16 mm of free play while the chamber pressure drops. The recesses cut into the top surface of the slide, bolt and firing pin go back as one unit. The empty case comes out on the bolt face and is ejected through the bottom of the receiver. The return spring is compressed to provide energy for the next forward stroke.

As the operating stud on the slide comes back it enters the open stirrup of the feed lever and rotates it back. On the Model 38/46 this operates the feed slide as in the RP-46. A cam path moves the belt feed slide inward and the feed pawl brings the next round up to the cartridge guide and over the stop pawl. As the feed slide goes forward with the operating stud, the feed pawl is moved out to engage the next round in the belt.

On the DShK-38 the backward movement of the operating stud rotates the feed lever and a pawl bears on a ratchet in the feed drum causing it to rotate (in a manner not unlike the revolving chamber of a revolver pistol). At the same time another pawl prevents counter rotation. The rotation of the drum draws the belt into the gun. The first cartridge is pressed along the lips in the feed plate and is subsequently forced forward on the next feed stroke of the bolt.

Stripping

Lift the feed cover and remove the belt.

Check the feed drum of the DShK-38 is empty.

Check the chamber is clear.

Push out the locking pin at the rear of the receiver and detach the backplate from the receiver.

Remove the sear through the back of the receiver.

Force the gas cylinder forward and rotate it clockwise to free it from the barrel.

Retract the cocking handle. Remove gas piston and slide with bolt and firing pin. Remove gas cylinder.

On the Model 38/46 unscrew the barrel lock securing nut. Remove barrel lock to the side. Pull barrel forward out of the receiver.

Re-assembly

Assemble the firing pin in the bolt and place locking lugs on the sides. Place bolt on slide and push into receiver.

Pull gas cylinder forward and rotate anti-clockwise to re-connect it with the barrel.

Slide sear mechanisms into receiver. Drop backplate. Replace locking pin. On Model 38/46 replace barrel, barrel lock and securing nut.

Accessories

The following are issued with the 12.7 mm heavy machine guns: cleaning rod; chamber cleaning brush; oil and solvent container; combination tool; punch and separated case extractor.

Sights

The ground sights are of orthodox configuration. The foresight is a pillar which screws up and down for zeroing. The bolt through the base of the foresight can be loosened and the sight moved totally for zeroing.

The rear sight has vertical twin pillars with a U back sight between them. When the sight is upright the elevating screw is at the top. Rough setting of the sight is achieved by pressing the slide catch and moving the slide connecting the pillars, up or down until the upper edge is aligned with the required range reading which is shown in hundreds of metres. The elevating screw gives fine adjustment. There is a windage knob at the base of the sight.

The anti-aircraft sight Model 1943 requires the concerted action of two men. The number two rotates his sight and lines it up along the fuselage of the target and so indicates the approach angle. He does this by rotating the target course hand crank. The drive shaft also rotates the number one's sight. The number one lines up the rear, poop sight with an aim off lead determined by his estimate of the target speed.

Mountings

The basic mount for both the DShK-38 and the Model 38/46 is the Model 1938. This is a two-wheeled mount that can be moved by man, mule or motor. A shield is sometimes provided for ground use. The traverse and elevation are coarse with a fine elevation adjustment. The gun is locked in position before firing. The mount can be converted for anti-aircraft use by removing the gun and shield and then taking off the wheels and axle. The three legs are spread, the gun mounted above them on the saddle and the sight inserted in the dovetail on the left side of the receiver.

DATA

Cartridge: 12.7 mm x 108

Operation: gas, automatic

Method of locking: projecting lugs

Feed: belt

WEIGHTS

Gun: 35.7 kg

Barrel: 12.7 kg

LENGTHS

Gun: 1588 mm

Barrel: 1070 mm

MECHANICAL FEATURES

Barrel: (regulator) 3 position; (cooling) air. Model 38/46 has changeable barrel

Sights: (foresight) cylindrical post; (rear sight) vertical leaf with U back sight

Sight radius: 1111 mm

FIRING CHARACTERISTICS

Muzzle velocity: 860 m/s

Rate of fire: (cyclic) 575 rounds/minute

Effective range: 2000 m

Manufacturer

State factories

Status

Current. No longer in production

Service

Soviet and allied armies as well as several guerrilla forces

12.7 mm NSV heavy machine gun

Development of this weapon began in 1969 and was carried out by a team of three designers, GI Nikitin, IM Sokolov and VI Volkov. It is employed extensively in the ground role as a heavy support weapon or as an air defence weapon, and as a tank air defence machine gun. In the ground role it is

provided with a shoulder stock and pistol grip, tripod and optical sight; in the air defence role it is provided with the collimating optical sight K10-T, and it is also fitted with normal iron sights.

UNION OF SOVIET SOCIALIST REPUBLICS

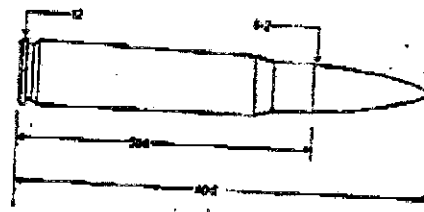
Ball, heavy, Type D
Ball, light, Type LPS
API Type B32
API Type BS-40
Tracer Type T46
API-T Type BZT
Incendiary/Obs Type ZP

11.98 g streamlined bullet, lead core
9.65 g streamlined bullet, steel core, V₀ 870 m/s
10.64 g streamlined bullet, steel core with incendiary composition, V₀ 870 m/s
12.11 g non-streamlined bullet, tungsten core, incendiary composition, V₀ 805 m/s
9.65 g non-streamlined bullet
9.2 g non-streamlined bullet, steel core with incendiary and tracer composition
10.36 g non-streamlined bullet, steel jacket with incendiary composition, explosive charge and striker in nose

AMMUNITION 519

7.92 mm Mauser

7.92 mm x 57
V₀ 750 m/s
E₀ 3600 J



Probably the most widely distributed military rifle cartridge in history, the 7.92 mm Mauser has appeared in innumerable variant forms and has been manufactured in every major country at some time or other. But, since it is a full-sized, old-style, powerful cartridge, its use in rifles is declining, though all sorts of border guards, police, customs guards and similar paramilitary forces throughout the world are still furnished with Mauser rifles and carbines. Its major military application today is in belt-fed machine guns, eg the Yugoslav M53, but even this is being eroded in favour of the 7.62 mm x 51 cartridge. Nevertheless, millions of suitable weapons exist, and they appear with unfailing regularity in any coup d'état or civil commotion. Vast amounts of ammunition must exist and the cartridge is still in production by several companies. Brass or steel-cased military ammunition can be found, with a wide selection of bullet types. Much ex-Second World War German and British (for the Vickers machine gun) ammunition is still to be found, though a lot of it is quite unsuited to use with infantry weapons. British 7.92 mm cartridges should never be used in automatic rifles, while German ammunition with a green ring on the bullet is a high-velocity type for use only in aircraft machine guns.

The more common service loadings are as follows:

GERMANY (EX-SECOND WORLD WAR)

Ball SmEiang
Heavy Ball, sS
Semi-AP SmE
AP SmK
AP SmK(G)
AP-Incendiary PmK
AP-Tracer SmKL
Incendiary/Obs SmKB

11.53 g streamlined bullet, mild steel core, V₀ 837 m/s
12.83 g streamlined bullet, V₀ 765 m/s
11.53 g streamlined bullet, V₀ 770 m/s
11.53 g non-streamlined bullet, steel core, V₀ 798 m/s
12.57 g non-streamlined bullet, tungsten carbide core, V₀ 911 m/s. Penetrates 19 mm at 100 m
10.11 g streamlined bullet, steel core, white phosphorus incendiary compound, V₀ 835 m/s
10.12 g streamlined bullet, trace to 1000 m, changing from green to red at 600 m, V₀ 832 m/s
10.82 g streamlined bullet, V₀ 814 m/s

UNITED KINGDOM

Ball Mk 2Z
AP W Mk 2Z
Tracer G Mk 3Z
Incendiary B Mk 2Z

12.83 g streamlined bullet, V₀ 756 m/s, E₀ 3666 J
11.53 g streamlined bullet, V₀ 786 m/s. Penetrates 11 mm of plate at 100 m
10.49 g non-streamlined bullet, dark ignition, traces to 1000 m, V₀ 756 m/s
11.66 g streamlined bullet, V₀ 771 m/s

Commercial (typical):

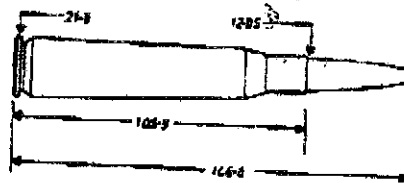
FABRIQUE NATIONALE

Ball
AP
Tracer

12.8 g streamlined bullet, V₀ 750 m/s, E₀ 3600 J
12 g non-streamlined bullet, steel core, V₀ 735 m/s
11.5 g semi-streamlined bullet, V₀ 735 m/s

12.7 mm Soviet

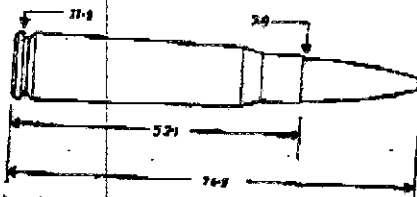
12.7 mm x 107
V₀ 840 m/s
E₀ 16 920 J



This cartridge was developed in the late 1920s and was influenced by the German First World War 13 mm TuF (Tank and Flieger) cartridge. It first saw service with the Degtyarev DK heavy machine gun in the mid-1930s and has remained in constant use ever since. It has been widely distributed throughout Soviet satellite and Third World countries, but manufacture has been confined to China.

7.65 mm Argentinian Mauser

7.65 mm x 54
V₀ 825 m/s
E₀ 3403 J



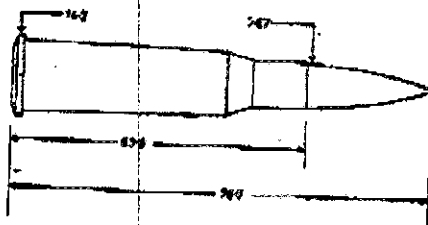
This cartridge, designed in 1889, was widely adopted in South America, notably by the Argentinian, Bolivian, Colombian, Ecuadorian and Peruvian armies, as well as being used elsewhere in the world. As a result, it can be met all over South America and may well still be in reserve stocks. Sporting rifles in this chambering were once popular and sporting ammunition is still made. The standard military loadings currently manufactured by Fabrique Nationale de Laige are as follows:

Ball Type S
Ball Type SS
AP
Tracer

10 g streamlined bullet, lead core
11.25 g non-streamlined bullet, V₀ 750 m/s
10.95 g bullet, V₀ 770 m/s
10.45 g bullet, V₀ 725 m/s

.303 British

17 mm x 56R
V₀ 731 m/s
E₀ 3011 J



It was the standard British and Imperial cartridge from 1889 to the 1960s and accompanied the Lee-Enfield rifle and the Vickers, Vickers-Berthier and other machine guns. It is still in considerable use throughout the world and is currently manufactured by a number of commercial firms in both military and commercial (sporting) loadings. To the best of our knowledge it has never been made in steel-cased form.

Principal standard loadings are in service as follows:

UNITED KINGDOM
Mk 7
Mk 8Z
W Mk 1
Tracer G Mk 3
Tracer G Mk 8
Incendiary B Mk 7
Commercially available

11.27 g non-streamlined bullet
11.34 g streamlined bullet, for use in machine guns only
11.27 g non-streamlined bullet with hard steel core, V₀ 722 m/s. Penetration 10 mm at 100 m
9.98 g non-streamlined bullet, traces to 800 m, V₀ 701 m/s
10.95 g non-streamlined bullet, dark ignition, traces to 1000 m, V₀ 722 m/s
10.75 g non-streamlined bullet, V₀ 722 m/s

**SOF Weapons Training Facility
Fort Bragg, North Carolina**

DACA21-03-R-0024

PART 8: Seismic Study Results

**Report for Vibration Monitoring
Proposed S.O.F. Weapons
Training Facility
Fayetteville, North Carolina
S&ME Project No. 1051-02-093**

Prepared for:

Knight Architects, Inc.
2358 Perimeter Park Drive
Suite 350
Atlanta, Georgia 30341

Prepared By:

S&ME, INC.
3109 Spring Forest Road (27616)
Post Office Box 58069
Raleigh, North Carolina 27658-8069

July 12, 2002



July 12, 2002

Knight Architects, Inc.
2358 Perimeter Park Drive, Suite 350
Atlanta, Georgia 30341

Attention: Mr. Joseph C. Knight, AIA.

Reference: Report of Vibration Monitoring
Proposed S.O.F. Weapons Training Facility
Fort Bragg; Fayetteville, North Carolina
S&ME Project No. 1051-02-093

Dear Mr. Knight:

As requested, a representative of S&ME, Inc. visited the site on June 25 and June 26, 2002 to record ambient vibrations at the planned Weapons Training Facility site. Vibrations were measured using an SSU 3000 LC engineering seismograph. This unit records peak particle velocity and frequency in a continuous mode. In a seismic event mode, the unit records peak particle velocity, frequency, acceleration and displacement. Peak particle velocity is one of the most commonly used parameters to evaluate the magnitude and potential effects of vibrations on a structure. A summary of measurement locations and recorded vibrations is provided below. Copies of seismograph data and a location sketch are attached.

Vibrations were measured when the firing ranges 46 and 50 were in use. We understand these ranges are those located closest to the planned Weapons Training Facility. Range 46 is used for small arms practice and is located about 1.8 kilometers west/northwest of the proposed facility. Range 50 is located about 2 kilometers west/northwest of the proposed facility and is used for demolition practice. We understand the largest explosive used in the demolition range is 50 pounds.

On June 25, 2002, vibrations were measured adjacent to the existing Inspections Building located at the northwest corner of the planned facility. This area is approximately the closest point on the site to the ranges. The demolition range was in use on June 25, 2002. On June 26, 2002, vibrations were measured near the front of the proposed Weapons Training Facility building while the small arms range was in use.

Recorded peak particle velocities ranged from 0.005 to 0.023 inches per second. The maximum peak particle velocity of 0.023 inches per second was recorded when seismograph cables were being adjusted and our representative was walking around the seismograph. Most recorded vibrations were between 0.005 and 0.008 inches per second. During the monitoring process, our representative could not sense any vibrations. For comparative purposes, peak particle velocities less than about 0.013 inches per second are imperceptible to humans. Those in the range of 0.013 to 0.035 inches per second are only slightly perceptible. Published ranges of vibrations considered damaging to structures are from 0.5 to 2.0 inches per second depending on the type and age of the structure. Also, we could make no distinction between vibrations when detonation or small arms fire was active or inactive.

In 1996, S&ME, Inc. conducted a similar vibration study for the North Carolina Department of Transportation at the Bowman-Gray Medical Center in Winston Salem. This study was conducted to obtain background vibration data in preparation for a nearby bridge demolition project. Ambient vibrations were recorded in a room housing scanning electron microscopes. Recorded vibrations ranged from 0.01 to 0.015 inches per second with no activity in the room. With two or three students in the room working at the microscope stations, vibrations increased to between 0.025 inches per second and 0.059 inches per second. Recorded vibrations in this very quiet research environment had no known effect on the vibration sensitive scanning electronic microscopes.

Since recorded vibrations at the planned Weapons Training Facility were lower than nearly all recorded at the Bowman-Gray Medical Center, in a very sophisticated research environment, we

Report of Vibration Monitoring
Proposed S.O.F Weapons Training Facility
Fayetteville, North Carolina

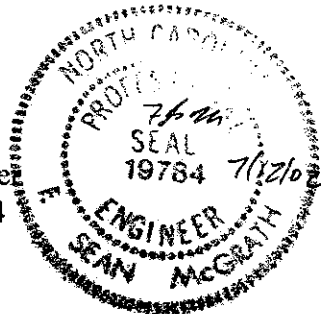
S&ME Job No. 1051-02-093
July 12, 2002

would not expect vibrations within the range of those recorded at the Weapons Training Facility to have an adverse effect on planned equipment or foundations. No distinction could be made between vibrations recorded during active firing in the ranges and those recorded during periods of inactivity. We expect recorded vibrations were the result of "normal" ambient conditions (possibly wind, nearby vehicle traffic, electrical currents, etc.).

We appreciate the opportunity to provide vibration monitoring services to Knight Architects, Inc. Please do not hesitate to contact us if you have any questions or if we may be of further assistance.

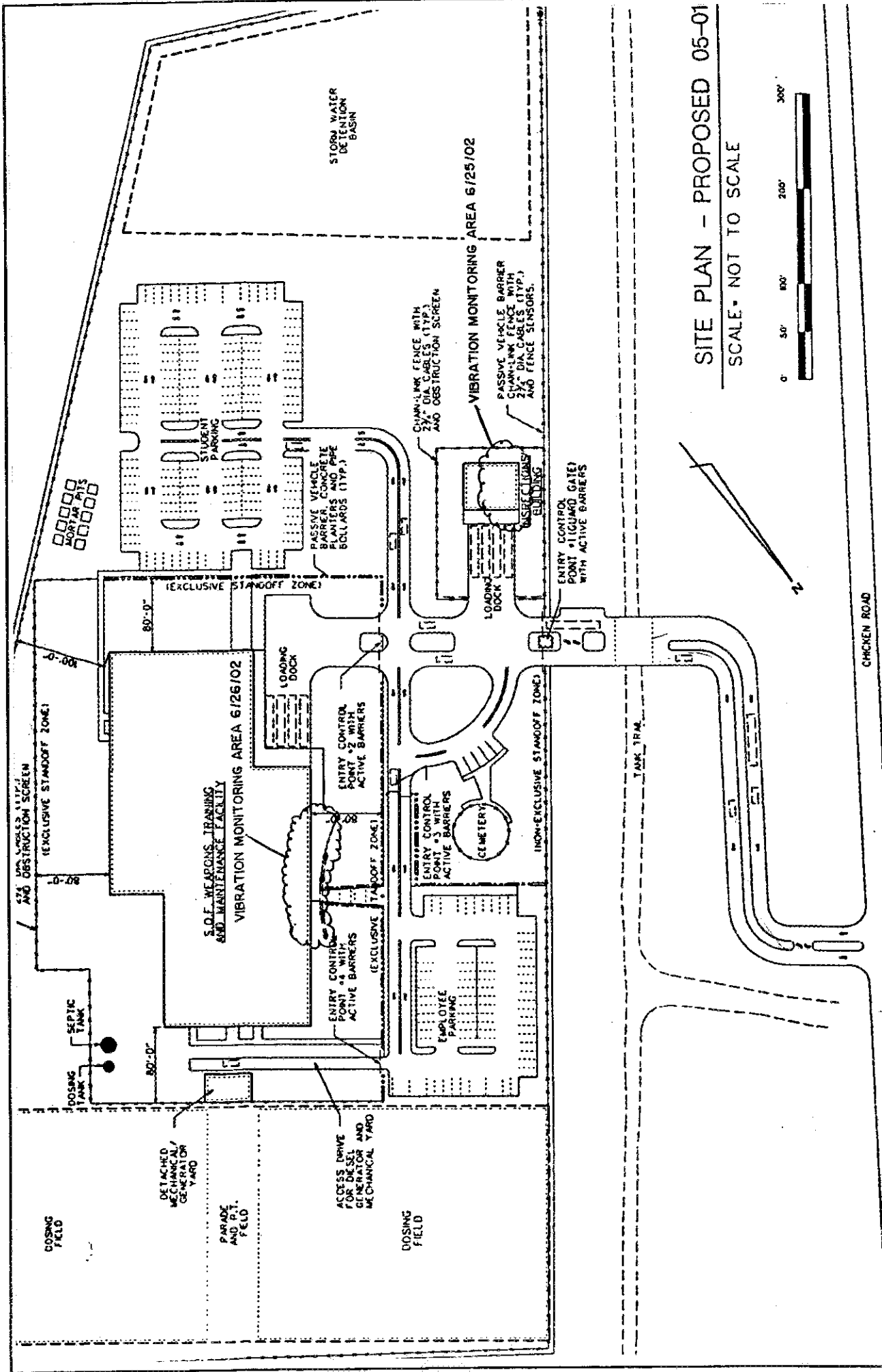
Sincerely,
S&ME, Inc.

F. Sean McGrath
F. Sean McGrath, P.E.
Senior Geotechnical Engineer
N.C. Registration No. 19784




FSM/htm

Attachment(s)



SITE PLAN - PROPOSED 05-01
SCALE - NOT TO SCALE



VIBRATION MONITORING LOCATIONS PROPOSED S.O.F. WEAPONS TRAINING FACILITY FT. BRAGG, NORTH CAROLINA		 S&ME ENGINEERING • TESTING ENVIRONMENTAL SERVICES		FIGURE NO.
JOB NO.	1051-02-093	SCALE	N.T.S.	1
CHECKED BY	FSM	DRAWN BY	TRP	
DATE	JULY 2002			

WAVEFORM SCAN STARTING 06/25/02 12:02:55
TRIGGERS OFF, 0.025 in/s (5.0 s)

END OF SCAN - 06/25/02 12:56:36

8 06/25/02 12:03:08
8 06/25/02 12:56:32
0 event(s) over trigger
0.025 in/s OFF ~~DID NOT EXCEED~~
0.025 in/s

WAVEFORM SCAN STARTING 06/25/02 12:57:36
TRIGGERS OFF, 0.005 in/s (5.0 s)

END OF SCAN - 06/25/02 13:00:43

8 06/25/02 12:57:49
8 06/25/02 13:00:40
0 event(s) over trigger
0.005 in/s OFF ~~DID NOT EXCEED~~
0.005 in/s

HISTOGRAM SCAN STARTING 06/25/02 13:03:58
Hist. Mode Interval. 1 min (1440 samples)

GEOSONICS INC

SAFEGUARD SEISMIC UNIT 3000 L/C P
SN: 8252 (00.47)
SAFEGUARD SEISMIC UNIT 3000 L/C P

Date & Time..... 06/25/02 13:05:00
Event Number..... 8

Client..... ~~KNIGHT~~
Operation..... ~~BACKGROUND~~
SSU Location..... ~~SOP~~
Distance to Source.. ~~6500 FT~~
Operator..... ~~TANSKY~~
Comments.....
Additional Note.....

Hist. Mode Interval. 1 min
Hist. Mode Samples.. 1440

TIME--- L: MAX, HZ--- T: MAX, HZ--- V: MAX, HZ--- S: M

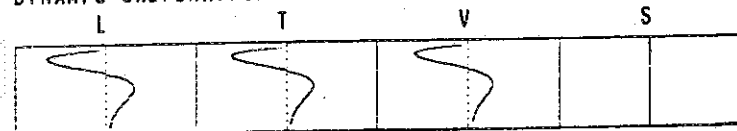
PEAK SUMMARY

0.000 in/s 06/25/02 13:05:00
76 db 06/25/02 13:05:00

SUMMARY --L-- --T-- --V--
PPV..... 0.000 0.000 0.000 in/s
FRQ..... 125.0 38.5 2.6 Hz

Peak Sound..... 76 db
.0000 psi

DYNAMIC CALIBRATION CHECK



SHAKETABLE CALIBRATED.. 05/15/02 00:00:00
BY GeoSonics, Inc.
Box 779
Warrendale, PA 15095 U.S.A.
724.934.2900, 724.934.2999 (fax)

SAFEGUARD SEISMIC UNIT 3000 L/C P
SN: 8252 (00.47)
SAFEGUARD SEISMIC UNIT 3000 L/C P

Date & Time..... 06/25/02 13:16:00
Event Number..... 9

Client..... KNIGHT
Operation..... BACKGROUND
SSU Location..... SOP
Distance to Source.. 6500 ft
Operator..... TANSKY
Comments.....
Additional Note.....

Hist. Mode Interval. 1 min
Hist. Mode Samples.. 1440

TIME--- L: MAX, HZ--- T: MAX, HZ--- V: MAX, HZ--- S: MAX

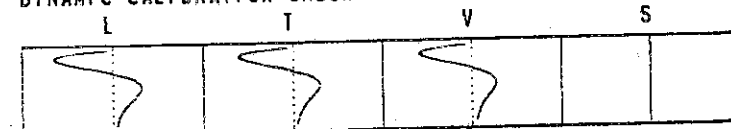
PEAK SUMMARY

0.008 in/s 06/25/02 13:16:00
79 db 06/25/02 13:16:00

SUMMARY --L-- --T-- --V--
PPV..... 0.005 0.005 0.008 in/s
FRQ..... 50.0 20.8 3.5 Hz

Peak Sound..... 79 db
.0001 psi

DYNAMIC CALIBRATION CHECK



SHAKETABLE CALIBRATED.. 05/15/02 00:00:00
BY GeoSonics, Inc.
Box 779
Warrendale, PA 15095 U.S.A.
724.934.2900, 724.934.2999 (fax)

END OF SCAN - 06/25/02 13:19:45

HISTOGRAM SCAN STARTING 06/25/02 13:22:15
Hist. Mode Interval. 1 min (1440 samples)

Tuesday, 06/25/02 13:45:00 -- 101 db

Tuesday, 06/25/02 14:11:00

14:11:00	0.005, 17.2	0.005, 166.7	0.005, 100.0	79
14:12:00	0.005, 125.0	0.005, 45.5	0.005, 41.7	78
14:13:00	0.005, 166.7	0.005, 29.4	0.005, 125.0	79
14:14:00	0.005, 100.0	0.005, 7.7	0.005, 166.7	79
14:15:00	0.005, 62.5	0.005, 50.0	0.005, 62.5	79
14:16:00	0.005, 100.0	0.005, 35.7	0.005, 166.7	79
14:17:00	0.005, 50.0	0.005, 17.9	0.005, 100.0	78
14:18:00	0.005, 166.7	0.005, 26.3	0.005, 50.0	79
14:19:00	0.005, 41.7	0.008, 125.0	0.005, 50.0	78
14:20:00	0.005, 50.0	0.005, 29.4	0.005, 41.7	79
14:21:00	0.005, 71.4	0.005, 55.6	0.005, 125.0	79
14:22:00	0.005, 100.0	0.005, 71.4	0.005, 250.0	79
14:23:00	0.005, 100.0	0.005, 45.5	0.005, 125.0	78
14:24:00	0.005, 45.5	0.005, 83.3	0.005, 83.3	78
14:25:00	0.005, 21.7	0.005, 50.0	0.005, 166.7	78
14:26:00	0.005, 33.3	0.005, 62.5	0.005, 250.0	78
14:27:00	0.005, 55.6	0.005, 100.0	0.005, 62.5	78
14:28:00	0.005, 41.7	0.005, 100.0	0.005, 100.0	78
14:29:00	0.005, 25.0	0.005, 35.7	0.005, 71.4	86
14:30:00	0.005, 71.4	0.005, 125.0	0.005, 100.0	79
14:31:00	0.005, 35.7	0.005, 45.5	0.005, 83.3	78
14:32:00	0.005, 71.4	0.005, 29.4	0.005, 166.7	79
14:33:00	0.005, 83.3	0.008, 38.5	0.005, 100.0	78
14:34:00	0.005, 166.7	0.005, 41.7	0.005, 125.0	78
14:35:00	0.005, 71.4	0.005, 38.5	0.005, 55.6	78
14:36:00	0.005, 25.0	0.005, 62.5	0.005, 125.0	79
14:37:00	0.005, 100.0	0.005, 50.0	0.005, 250.0	78
14:38:00	0.005, 41.7	0.005, 83.3	0.005, 250.0	78
14:39:00	0.005, 41.7	0.005, 29.4	0.005, 166.7	79
14:40:00	0.005, 45.5	0.008, 45.5	0.005, 250.0	78

Tuesday, 06/25/02 14:19:00 -- 0.008 in/s, 125.0 HZ

Tuesday, 06/25/02 14:29:00 -- 86 db

Tuesday, 06/25/02 14:41:00

14:41:00	0.005, 100.0	0.005, 71.4	0.005, 71.4	79
14:42:00	0.005, 100.0	0.008, 71.4	0.005, 166.7	78
14:43:00	0.005, 29.4	0.005, 35.7	0.005, 38.5	82
14:44:00	0.005, 50.0	0.005, 83.3	0.005, 55.6	78
14:45:00	0.005, 55.6	0.005, 35.7	0.005, 83.3	78
14:46:00	0.005, 55.6	0.005, 35.7	0.005, 83.3	78
14:47:00	0.005, 83.3	0.005, 83.3	0.005, 166.7	79
14:48:00	0.005, 83.3	0.005, 100.0	0.005, 45.5	78
14:49:00	0.005, 166.7	0.005, 35.7	0.005, 83.3	79
14:50:00	0.005, 166.7	0.005, 38.5	0.005, 29.4	78
14:51:00	0.005, 55.6	0.008, 22.7	0.005, 250.0	79
14:52:00	0.005, 100.0	0.008, 71.4	0.005, 166.7	79
14:53:00	0.005, 33.3	0.005, 50.0	0.005, 50.0	78
14:54:00	0.005, 100.0	0.005, 83.3	0.005, 125.0	78
14:55:00	0.005, 45.5	0.005, 19.2	0.005, 166.7	79
14:56:00	0.005, 250.0	0.005, 50.0	0.005, 100.0	78
14:57:00	0.005, 83.3	0.005, 38.5	0.005, 125.0	78
14:58:00	0.005, 31.3	0.005, 45.5	0.005, 100.0	78
14:59:00	0.005, 166.7	0.005, 62.5	0.005, 125.0	78
15:00:00	0.005, 125.0	0.005, 83.3	0.005, 125.0	78
15:01:00	0.005, 166.7	0.005, 62.5	0.005, 125.0	78

END OF MONITORING

6/25/02

START 6126102

GEOSONICS INC

WAVEFORM SCAN STARTING 06/26/02 12:35:07
TRIGGERS OFF, 0.005 in/s (5.0 s)

GEOSONICS INC

SAFEGUARD SEISMIC UNIT 3000 L/C P
SN: 8252 (00.47)
SAFEGUARD SEISMIC UNIT 3000 L/C P

Date & Time..... 06/26/02 12:35:21
Event Number..... 12

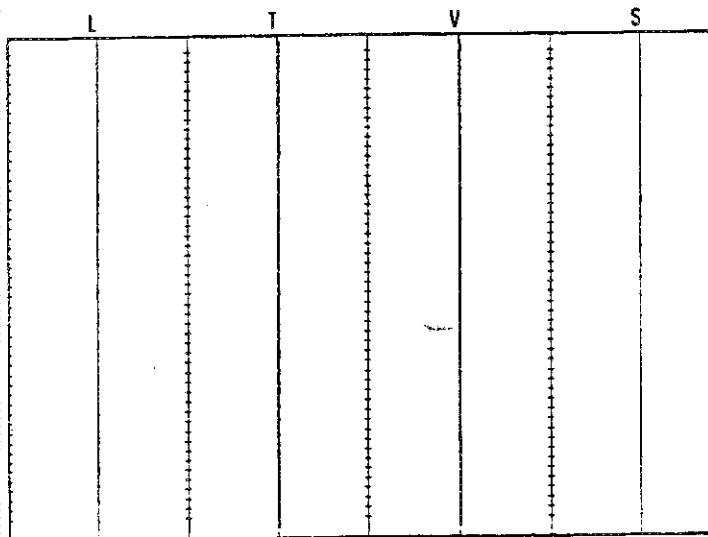
Client..... KNIGHT
Operation..... BACKGROUND
SSU Location..... SOP
Distance to Source.. 6500 ft
Operator..... TTANSKY
Comments.....
Additional Note.....

Recording Time..... 5.0 s

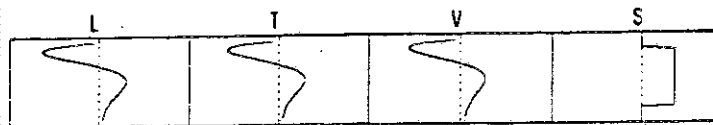
Triggers (seismic).. 0.005 in/s
(sound)..... OFF

	--L--	--T--	--V--
PPV.....	0.005	0.008	0.008 in/s
PD.....	0.07	0.21	0.30 (.001")
PPA.....	0.013	0.013	0.013 g
FRQ.....	0.2	500.0	500.0 Hz

Resultant PPV..... 0.010 in/s
Peak Sound..... 78 db
.0000 psi



DYNAMIC CALIBRATION CHECK



SHAKETABLE CALIBRATED.. 05/15/02 00:00:00
BY GeoSonics, Inc.
Box 779
Warrendale, PA 15095 U.S.A.
724.934.2900, 724.934.2999 (fax)

SAFEGUARD SEISMIC UNIT 3000 L/C P
SN: 8252 (00.47)
SAFEGUARD SEISMIC UNIT 3000 L/C P

Date & Time..... 06/26/02 13:03:21
Event Number..... 13

Client..... KNIGHT
Operation..... BACKGROUND
SSU Location..... SOP
Distance to Source.. 6500 ft
Operator..... TTANSKY
Comments.....
Additional Note.....

Recording Time..... 5.0 s

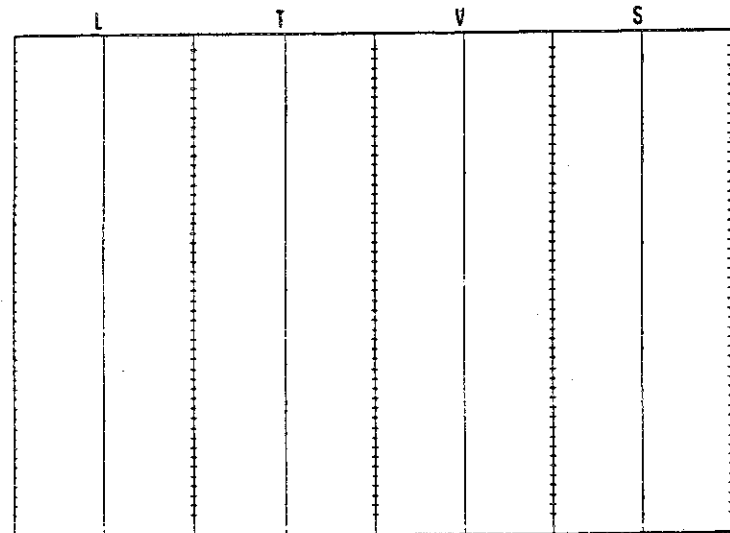
Triggers (seismic).. 0.005 in/s
(sound)..... OFF

	--L--	--T--	--V--
PPV.....	0.005	0.005	0.005 in/s
PD.....	0.13	0.38	0.24 (.001")
PPA.....	0.013	0.013	0.013 g
FRQ.....	0.2	0.1	0.4 Hz

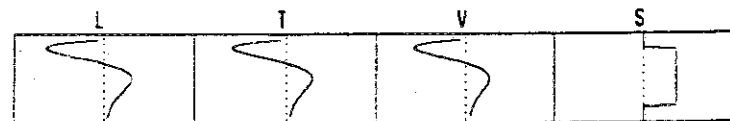
Resultant PPV..... 0.008 in/s
Peak Sound..... 78 db

WAVEFORM GRAPH

Data Scale (seismic)... 0.320 in/s
Data Scale (air)..... 118 db (.0023 psi)
Graph Scale..... 1 s = 0.5 in
Time Scale per mark.... 100 ms



DYNAMIC CALIBRATION CHECK



SHAKETABLE CALIBRATED.. 05/15/02 00:00:00
BY GeoSonics, Inc.
Box 779
Warrendale, PA 15095 U.S.A.
724.934.2900, 724.934.2999 (fax)

END OF SCAN - 06/26/02 13:06:28

WAVEFORM SCAN STARTING 06/26/02 13:08:12
TRIGGERS OFF, 0.005 in/s (5.0 s)

GEOSONICS INC

SAFEGUARD SEISMIC UNIT 3000 L/C P

SN: 8252 (00.47)

SAFEGUARD SEISMIC UNIT 3000 L/C P

Date & Time..... 06/26/02 13:13:45
Event Number..... 14

Client..... KNIGHT
Operation..... BACKGROUND
SSU Location..... SOP
Distance to Source.. 6500 ft
Operator..... TTANSKY
Comments.....
Additional Note.....

Recording Time..... 5.0 s

Triggers (seismic).. 0.005 in/s
(sound).... OFF

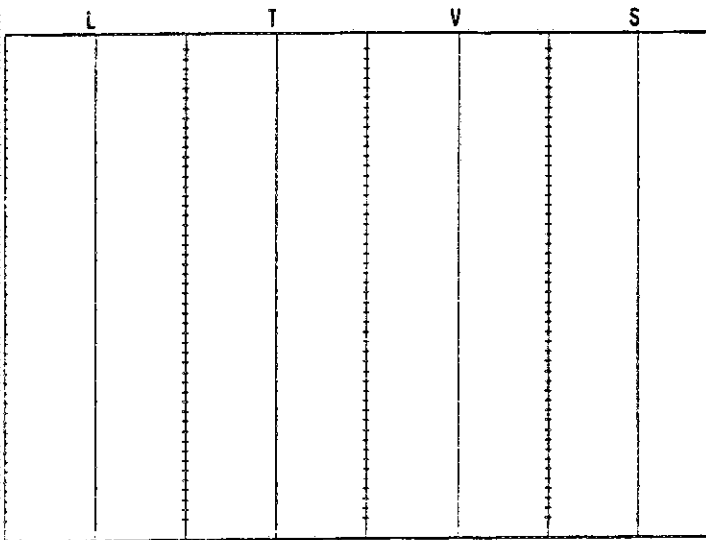
SUMMARY --L-- --T-- --V--
PPV..... 0.005 0.005 0.005 in/s
PD..... 0.06 0.05 0.08 (.001")
PPA..... 0.013 0.013 0.013 g
FRQ..... 1.1 500.0 0.7 Hz

Resultant PPV..... 0.008 in/s

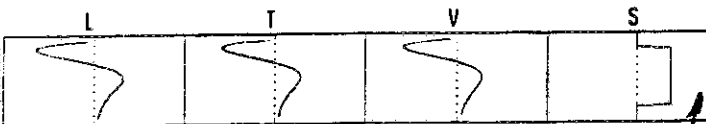
Peak Sound..... 78 db

WAVEFORM GRAPH

Data Scale (seismic)... 0.320 in/s
Data Scale (air)..... 118 db (.0023 psi)
Graph Scale..... 1 s = 0.5 in
Time Scale per mark.... 100 ms



DYNAMIC CALIBRATION CHECK



GEOSONICS INC

SAFEGUARD SEISMIC UNIT 3000 L/C P

SN: 8252 (00.47)

SAFEGUARD SEISMIC UNIT 3000 L/C P

Date & Time..... 06/26/02 13:15:57
Event Number..... 15

Client..... KNIGHT
Operation..... BACKGROUND
SSU Location..... SOP
Distance to Source.. 6500 ft
Operator..... TTANSKY
Comments.....
Additional Note.....

Recording Time..... 5.0 s

Triggers (seismic).. 0.005 in/s
(sound).... OFF

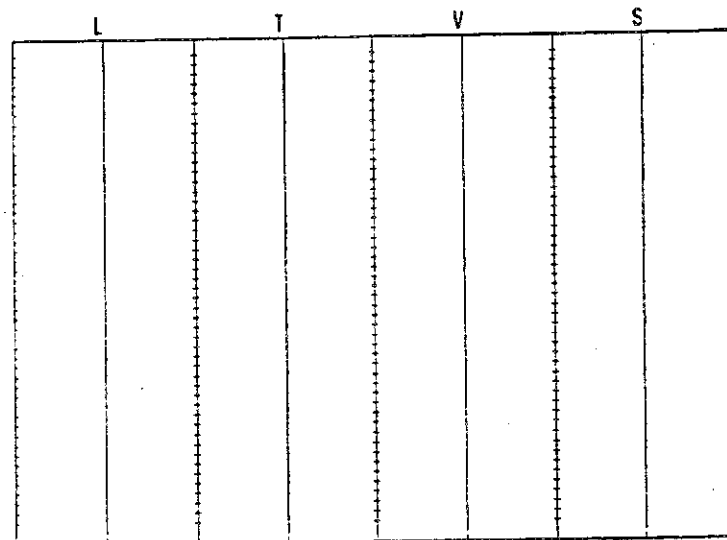
SUMMARY --L-- --T-- --V--
PPV..... 0.005 0.005 0.005 in/s
PD..... 0.22 0.22 0.18 (.001")
PPA..... 0.013 0.013 0.013 g
FRQ..... 0.1 500.0 0.4 Hz

Resultant PPV..... 0.008 in/s

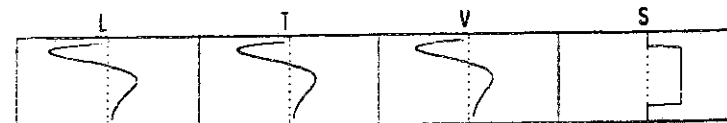
Peak Sound..... 78 db

WAVEFORM GRAPH

Data Scale (seismic)... 0.320 in/s
Data Scale (air)..... 118 db (.0023 psi)
Graph Scale..... 1 s = 0.5 in
Time Scale per mark.... 100 ms



DYNAMIC CALIBRATION CHECK



SHAKETABLE CALIBRATED.. 05/15/02 00:00:00
BY GeoSonics, Inc.
Box 779
Warrendale, PA 15095 U.S.A.
724.934.2900, 724.934.2999 (fax)

SHAKETABLE CALIBRATED.. 05/15/02 00:00:00
BY GeoSonics, Inc.
Box 779

GEOSONICS INC

SAFEGUARD SEISMIC UNIT 3000 L/C P
SN: 8252 (00.47)
SAFEGUARD SEISMIC UNIT 3000 L/C P

Date & Time..... 06/26/02 13:17:22
Event Number..... 16

Client..... KNIGHT
Operation..... BACKGROUND
SSU Location..... SOP
Distance to Source.. 6500 ft
Operator..... TTANSKY
Comments.....
Additional Note.....

Recording Time..... 5.0 s

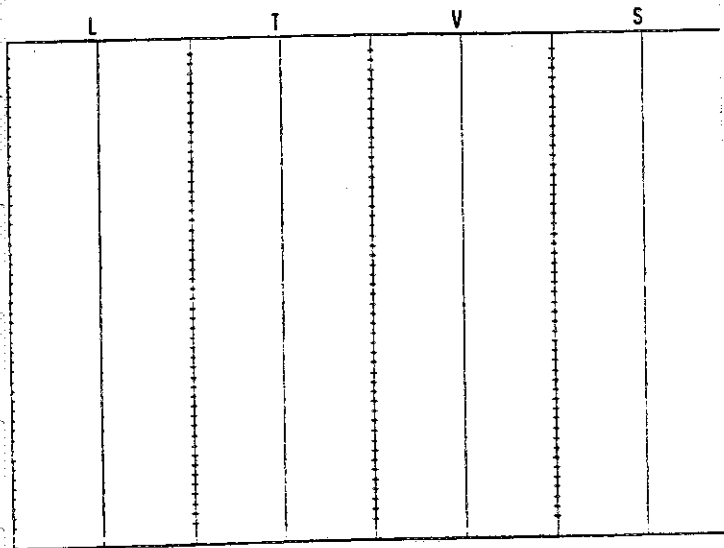
Triggers (seismic).. 0.005 in/s
(sound)..... OFF

SUMMARY	--L--	--T--	--V--
PPV.....	0.005	0.005	0.005 in/s
PD.....	0.05	0.07	0.09 (.001")
PPA.....	0.013	0.013	0.013 g
FRQ.....	0.2	500.0	0.5 Hz

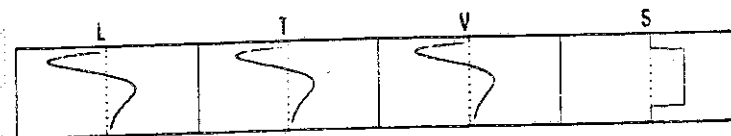
Resultant PPV..... 0.008 in/s
Peak Sound..... 78 db

WAVEFORM GRAPH

Data Scale (seismic)... 0.320 in/s
Data Scale (air)..... 118 db (.0023 psi)
Graph Scale..... 1 s = 0.5 in
Time Scale per mark.... 100 ms



DYNAMIC CALIBRATION CHECK



SHAKETABLE CALIBRATED.. 05/15/02 00:00:00
BY GeoSonics, Inc.
Box 779
Warrendale, PA 15095 U.S.A.
724.934.2900, 724.934.2999 (fax)

GEOSONICS INC

SAFEGUARD SEISMIC UNIT 3000 L/C P
SN: 8252 (00.47)
SAFEGUARD SEISMIC UNIT 3000 L/C P

Date & Time..... 06/26/02 13:21:16
Event Number..... 17

Client..... KNIGHT
Operation..... BACKGROUND
SSU Location..... SOP
Distance to Source.. 6500 ft
Operator..... TTANSKY
Comments.....
Additional Note.....

Recording Time..... 5.0 s

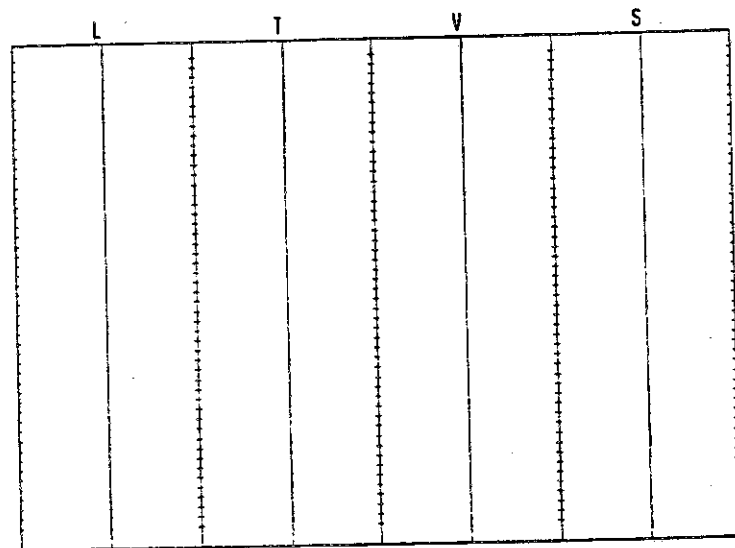
Triggers (seismic).. 0.005 in/s
(sound)..... OFF

SUMMARY	--L--	--T--	--V--
PPV.....	0.005	0.005	0.005 in/s
PD.....	0.26	0.45	0.39 (.001")
PPA.....	0.013	0.013	0.013 g
FRQ.....	500.0	0.3	1.4 Hz

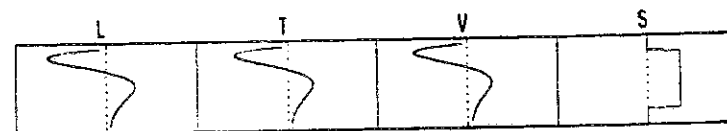
Resultant PPV..... 0.008 in/s
Peak Sound..... 79 db

WAVEFORM GRAPH

Data Scale (seismic)... 0.320 in/s
Data Scale (air)..... 118 db (.0023 psi)
Graph Scale..... 1 s = 0.5 in
Time Scale per mark.... 100 ms



DYNAMIC CALIBRATION CHECK



SHAKETABLE CALIBRATED.. 05/15/02 00:00:00
BY GeoSonics, Inc.
Box 779
Warrendale, PA 15095 U.S.A.
724.934.2900, 724.934.2999 (fax)
GEOSONICS INC

SAFEGUARD SEISMIC UNIT 3000 L/C P
SN:8252 (00.47)
SAFEGUARD SEISMIC UNIT 3000 L/C P

Date & Time..... 06/26/02 13:23:59
Event Number..... 18

Client..... KNIGHT
Operation..... BACKGROUND
SSU Location..... SOP
Distance to Source.. 6500 ft
Operator..... TTANSKY
Comments.....
Additional Note.....

Recording Time..... 5.0 s

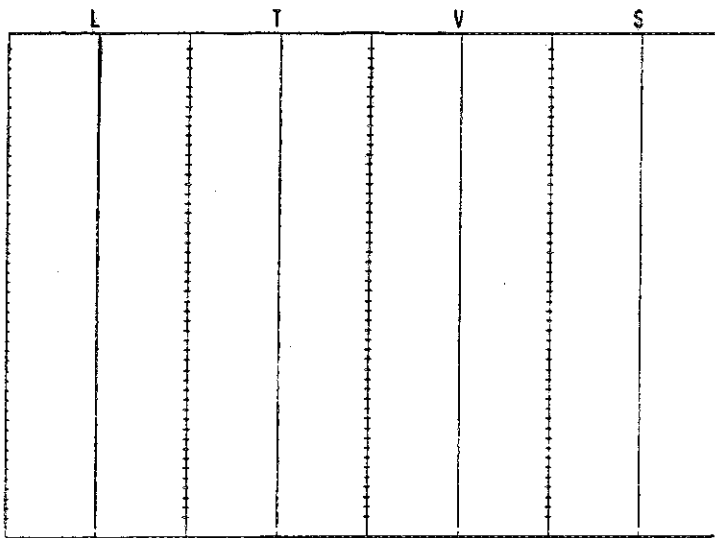
Triggers (seismic).. 0.005 in/s
(sound).... OFF

SUMMARY --L-- --T-- --V--
PPV..... 0.005 0.005 0.005 in/s
PD..... 0.07 0.07 0.08 (.001")
PPA..... 0.013 0.013 0.013 g
FRQ..... 0.4 500.0 0.4 Hz

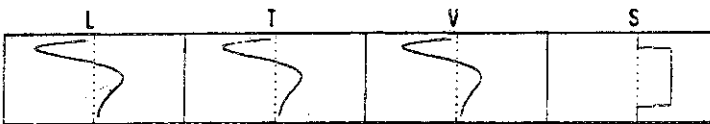
Resultant PPV..... 0.008 in/s
Peak Sound..... 78 db

WAVEFORM GRAPH

Data Scale (seismic)... 0.320 in/s
Data Scale (air)..... 118 db (.0023 psi)
Graph Scale..... 1 s = 0.5 in
Time Scale per mark.... 100 ms



DYNAMIC CALIBRATION CHECK



SHAKETABLE CALIBRATED.. 05/15/02 00:00:00
BY GeoSonics, Inc.
Box 779
Warrendale, PA 15095 U.S.A.
724.934.2900, 724.934.2999 (fax)
GEOSONICS INC

SAFEGUARD SEISMIC UNIT 3000 L/C P
SN:8252 (00.47)
SAFEGUARD SEISMIC UNIT 3000 L/C P

Date & Time..... 06/26/02 13:25:29
Event Number..... 19

Client..... KNIGHT
Operation..... BACKGROUND
SSU Location..... SOP
Distance to Source.. 6500 ft
Operator..... TTANSKY
Comments.....
Additional Note.....

Recording Time..... 5.0 s

Triggers (seismic).. 0.005 in/s
(sound).... OFF

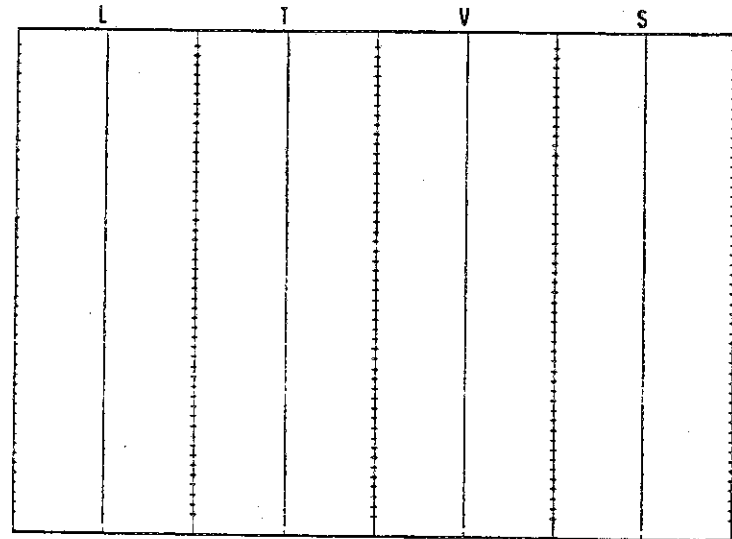
SUMMARY --L-- --T-- --V--
PPV..... 0.005 0.005 0.005 in/s
PD..... 0.13 0.18 0.17 (.001")
PPA..... 0.013 0.013 0.013 g
FRQ..... 500.0 500.0 1.1 Hz

Resultant PPV..... 0.008 in/s
Peak Sound..... 78 db

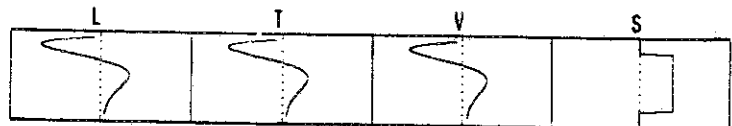
WAVEFORM GRAPH

0000 psi

Data Scale (seismic)... 0.320 in/s
Data Scale (air)..... 118 db (.0023 psi)
Graph Scale..... 1 s = 0.5 in
Time Scale per mark.... 100 ms



DYNAMIC CALIBRATION CHECK



SHAKETABLE CALIBRATED.. 05/15/02 00:00:00
BY GeoSonics, Inc.
Box 779
Warrendale, PA 15095 U.S.A.
724.934.2900, 724.934.2999 (fax)
GEOSONICS INC

SAFEGUARD SEISMIC UNIT 3000 L/C P
SN: 8252 (00.47)
SAFEGUARD SEISMIC UNIT 3000 L/C P

Date & Time..... 06/26/02 13:31:17
Event Number..... 22

Client..... KNIGHT
Operation..... BACKGROUND
SSU Location..... SOP
Distance to Source.. 6500 ft
Operator..... TTANSKY
Comments.....
Additional Note.....

Recording Time..... 5.0 s

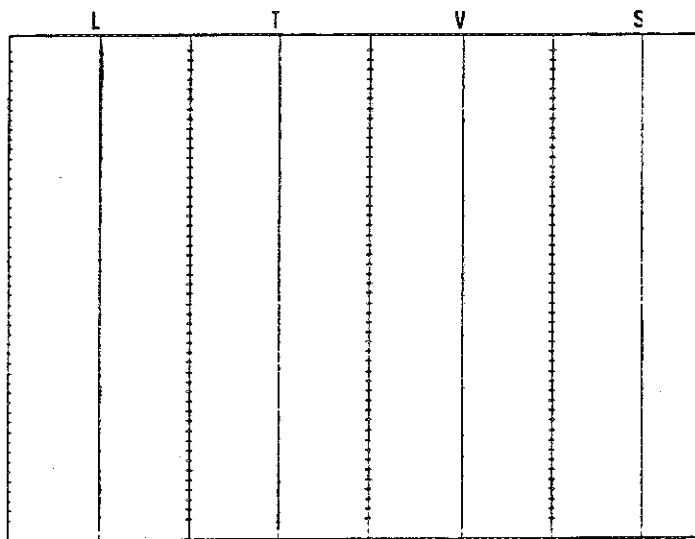
Triggers (seismic).. 0.005 in/s
(sound).... OFF

SUMMARY --L-- --T-- --V--
PPV..... 0.005 0.005 0.005 in/s
PD..... 0.05 0.05 0.06 (.001")
PPA..... 0.013 0.013 0.013 g
FRQ..... 0.8 0.1 0.8 Hz

Resultant PPV..... 0.008 in/s
Peak Sound..... 79 db
.....0.001 psi

WAVEFORM GRAPH

Data Scale (seismic)... 0.320 in/s
Data Scale (air)..... 118 db (.0023 psi)
Graph Scale..... 1 s = 0.5 in
Time Scale per mark.... 100 ms



SAFEGUARD SEISMIC UNIT 3000 L/C P
SN: 8252 (00.47)
SAFEGUARD SEISMIC UNIT 3000 L/C P

Date & Time..... 06/26/02 13:33:19
Event Number..... 23

Client..... KNIGHT
Operation..... BACKGROUND
SSU Location..... SOP
Distance to Source.. 6500 ft
Operator..... TTANSKY
Comments.....
Additional Note.....

Recording Time..... 5.0 s

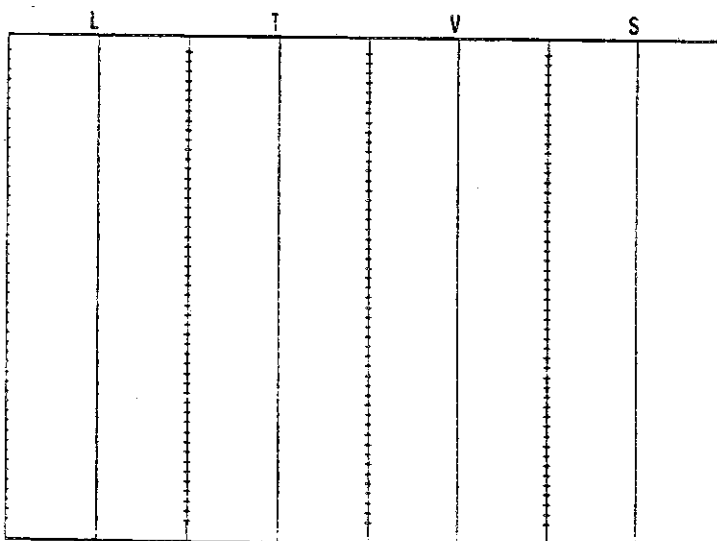
Triggers (seismic).. 0.005 in/s
(sound).... OFF

SUMMARY --L-- --T-- --V--
PPV..... 0.005 0.005 0.005 in/s
PD..... 0.07 0.09 0.08 (.001")
PPA..... 0.013 0.013 0.013 g
FRQ..... 500.0 500.0 0.6 Hz

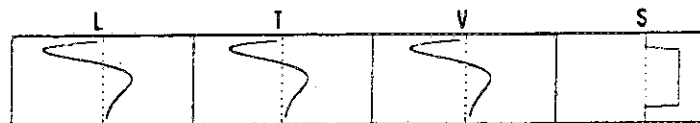
Resultant PPV..... 0.008 in/s
Peak Sound..... 78 db
.....0.000 psi

WAVEFORM GRAPH

Data Scale (seismic)... 0.320 in/s
Data Scale (air)..... 118 db (.0023 psi)
Graph Scale..... 1 s = 0.5 in
Time Scale per mark.... 100 ms

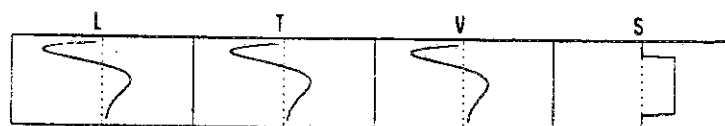


DYNAMIC CALIBRATION CHECK



SHAKETABLE CALIBRATED.. 06/15/02 00:00:00
BY GeoSonics, Inc.
Box 779
Warrendale, PA 15095 U.S.A.
724.934.2900, 724.934.2999 (fax)
GEOSONICS INC

DYNAMIC CALIBRATION CHECK



SHAKETABLE CALIBRATED.. 06/15/02 00:00:00
BY GeoSonics, Inc.
Box 779
Warrendale, PA 15095 U.S.A.
724.934.2900, 724.934.2999 (fax)
END OF SCAN - 06/26/02 13:36:08

SONICS INC

SAFEGUARD SEISMIC UNIT 3000 L/C P
SN: 8252 (00.47)
SAFEGUARD SEISMIC UNIT 3000 L/C P

te & Time..... 06/26/02 13:37:00
ent Number..... 24

Client..... KNIGHT
eration..... BACKGROUND
U Location..... SOP
Distance to Source.. 6500 ft
erator..... TTANSKY
mments.....
Additional Note.....

hist. Mode Interval. 1 min
Hist. Mode Samples.. 1440

ME----	L: MAX, HZ---	T: MAX, HZ---	V: MAX, HZ---	S: MAX
13:37:00	0.005, 50.0	0.005, 55.6	0.008, 2.0	81
13:38:00	0.005, 45.5	0.005, 8.9	0.005, 41.7	79
13:39:00	0.005, 50.0	0.005, 71.4	0.005, 100.0	79
13:40:00	0.005, 125.0	0.005, 41.7	0.005, 250.0	79
13:41:00	0.005, 125.0	0.005, 20.0	0.005, 83.3	79
13:42:00	0.005, 125.0	0.005, 21.7	0.005, 250.0	79
13:43:00	0.005, 83.3	0.005, 41.7	0.005, 250.0	79
13:44:00	0.005, 31.3	0.005, 71.4	0.005, 166.7	79
13:45:00	0.005, 125.0	0.005, 62.5	0.005, 62.5	87
13:46:00	0.005, 100.0	0.005, 13.9	0.005, 125.0	79
13:47:00	0.005, 100.0	0.005, 71.4	0.005, 62.5	79
13:48:00	0.008, 55.6	0.005, 125.0	0.005, 125.0	79
13:49:00	0.005, 166.7	0.005, 33.3	0.005, 83.3	79
13:50:00	0.005, 38.5	0.005, 71.4	0.005, 50.0	79
13:51:00	0.005, 62.5	0.005, 33.3	0.005, 166.7	79
13:52:00	0.005, 17.9	0.005, 27.8	0.005, 125.0	79
13:53:00	0.005, 31.3	0.005, 35.7	0.005, 125.0	79
13:54:00	0.005, 83.3	0.005, 166.7	0.005, 55.6	79
13:55:00	0.005, 22.7	0.008, 62.5	0.005, 62.5	81
13:56:00	0.005, 125.0	0.005, 71.4	0.005, 125.0	79
13:57:00	0.005, 33.3	0.005, 50.0	0.013, 1.7	136
13:58:00	0.005, 38.5	0.005, 83.3	0.005, 166.7	79
13:59:00	0.005, 250.0	0.005, 83.3	0.005, 250.0	79
14:00:00	0.005, 125.0	0.023, 35.7	0.023, 4.4	141
14:01:00	0.005, 62.5	0.005, 100.0	0.005, 100.0	79
14:02:00	0.005, 71.4	0.005, 125.0	0.005, 166.7	79
14:03:00	0.005, 71.4	0.005, 125.0	0.005, 62.5	79
14:04:00	0.008, 10.2	0.005, 45.5	0.005, 71.4	81
14:05:00	0.005, 62.5	0.005, 55.6	0.005, 166.7	79
14:06:00	0.005, 125.0	0.005, 166.7	0.013, 1.7	136

wednesday, 06/26/02 14:00:00 -- 0.023 in/s, 4.4 HZ
wednesday, 06/26/02 14:00:00 -- 141 db

Wednesday, 06/26/02 14:07:00

14:07:00	0.005, 50.0	0.005, 100.0	0.005, 38.5	79
14:08:00	0.005, 29.4	0.005, 83.3	0.005, 55.6	79
14:09:00	0.005, 26.3	0.005, 55.6	0.005, 125.0	78
14:10:00	0.005, 125.0	0.008, 125.0	0.005, 83.3	79
14:11:00	0.005, 100.0	0.005, 25.0	0.005, 125.0	79
14:12:00	0.005, 250.0	0.005, 83.3	0.005, 166.7	79
14:13:00	0.005, 125.0	0.005, 62.5	0.005, 166.7	78
14:14:00	0.005, 71.4	0.008, 125.0	0.005, 250.0	79
14:15:00	0.005, 100.0	0.005, 31.3	0.005, 166.7	79
14:16:00	0.005, 125.0	0.005, 38.5	0.005, 166.7	79
14:17:00	0.005, 62.5	0.005, 45.5	0.005, 250.0	79
14:18:00	0.005, 125.0	0.005, 35.7	0.005, 250.0	79
14:19:00	0.005, 83.3	0.008, 166.7	0.005, 125.0	79
14:20:00	0.005, 83.3	0.005, 100.0	0.005, 83.3	79
14:21:00	0.005, 62.5	0.005, 100.0	0.005, 125.0	78
14:22:00	0.005, 100.0	0.005, 20.8	0.005, 83.3	79
14:23:00	0.005, 250.0	0.005, 100.0	0.005, 83.3	79
14:24:00	0.005, 125.0	0.005, 26.3	0.005, 125.0	79
14:25:00	0.005, 38.5	0.005, 71.4	0.005, 166.7	79
14:26:00	0.005, 166.7	0.005, 71.4	0.005, 166.7	79
14:27:00	0.005, 71.4	0.005, 125.0	0.005, 71.4	79
14:28:00	0.005, 166.7	0.005, 125.0	0.005, 125.0	79
14:29:00	0.005, 100.0	0.005, 71.4	0.005, 250.0	79
14:30:00	0.005, 125.0	0.005, 71.4	0.005, 83.3	79
14:31:00	0.005, 100.0	0.005, 50.0	0.005, 100.0	79
14:32:00	0.005, 166.7	0.005, 100.0	0.005, 100.0	79
14:33:00	0.005, 62.5	0.005, 33.3	0.005, 100.0	79
14:34:00	0.005, 71.4	0.005, 125.0	0.005, 71.4	79
14:35:00	0.005, 100.0	0.005, 83.3	0.005, 83.3	79
14:36:00	0.005, 62.5	0.005, 100.0	0.005, 500.0	79

Wednesday, 06/26/02 14:10:00 -- 0.008 in/s, 125.0 HZ
Wednesday, 06/26/02 14:07:00 -- 79 db

END OF MONITORING

6/26/02

PART 9: **Asbestos and Lead Based Paints Survey**

Nolman Cubas

From: Brown, Charles W. MR.
Sent: Wednesday, August 07, 2002 9:11 AM
To: 'Cubas, Nolman'
Cc: 'Bell, Stephen'
Subject: PN43908 WTF Asbestos Lab Results for D-1405

Nolman,

Camille Cole has Faxed lab report for materials checked for asbestos in building D-1405, the only building to be demolished in the project. The results are no asbestos detected. Per Joe Stancar, FWRC Compliance Branch, the building can be crushed. I will FAX a copy of the report to you today.

Charlie

CLASSIFICATION

UNCLASSIFIED



**Headquarters
United States Army
Special Operations
Command**

**Fort Bragg, North Carolina
28307-5200**



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COMMAND/SECTION	OFFICE SYMBOL	PHONE/FAX NUMBER	AUTHORIZED SIGNATURE
FROM: CHARLIE BROWN DCSENGR, USASOC	AOEN	(910) 432-2354 (910) 432-2036 FAX	2
TO: Nolman Cubas Knight Arch.		770-452-0980	
INFO:			
			No. of Pages (including Header Sheet)

COMMENTS:

Nolman

*This is a copy of lab report for
D-1405. No asbestos detected.*

Charlie

APPENDIX I

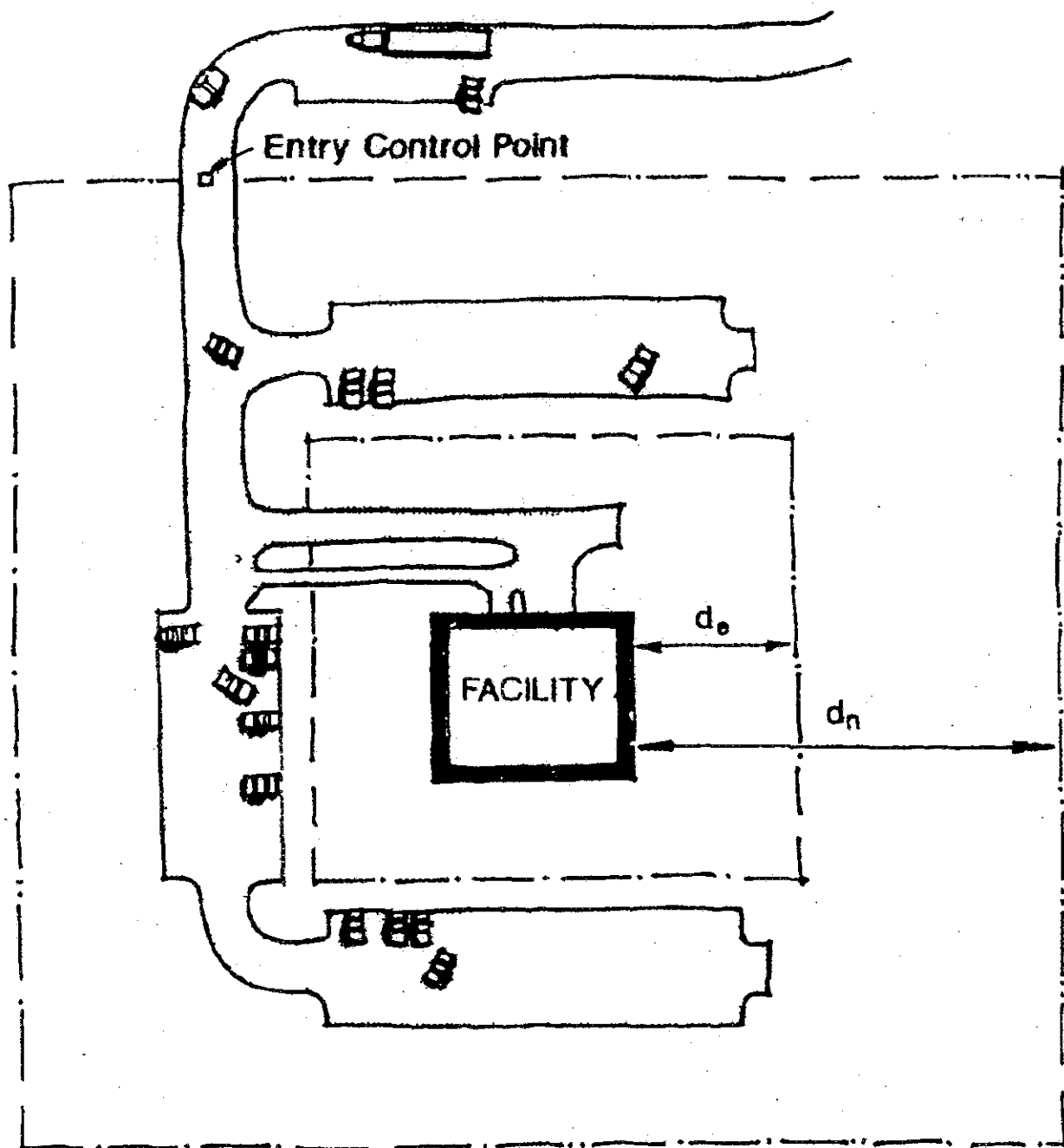
ANTITERRORISM/FORCE PROTECTION CONSTRUCTION REQUIREMENTS

Contents:

Part 1: Enclosures

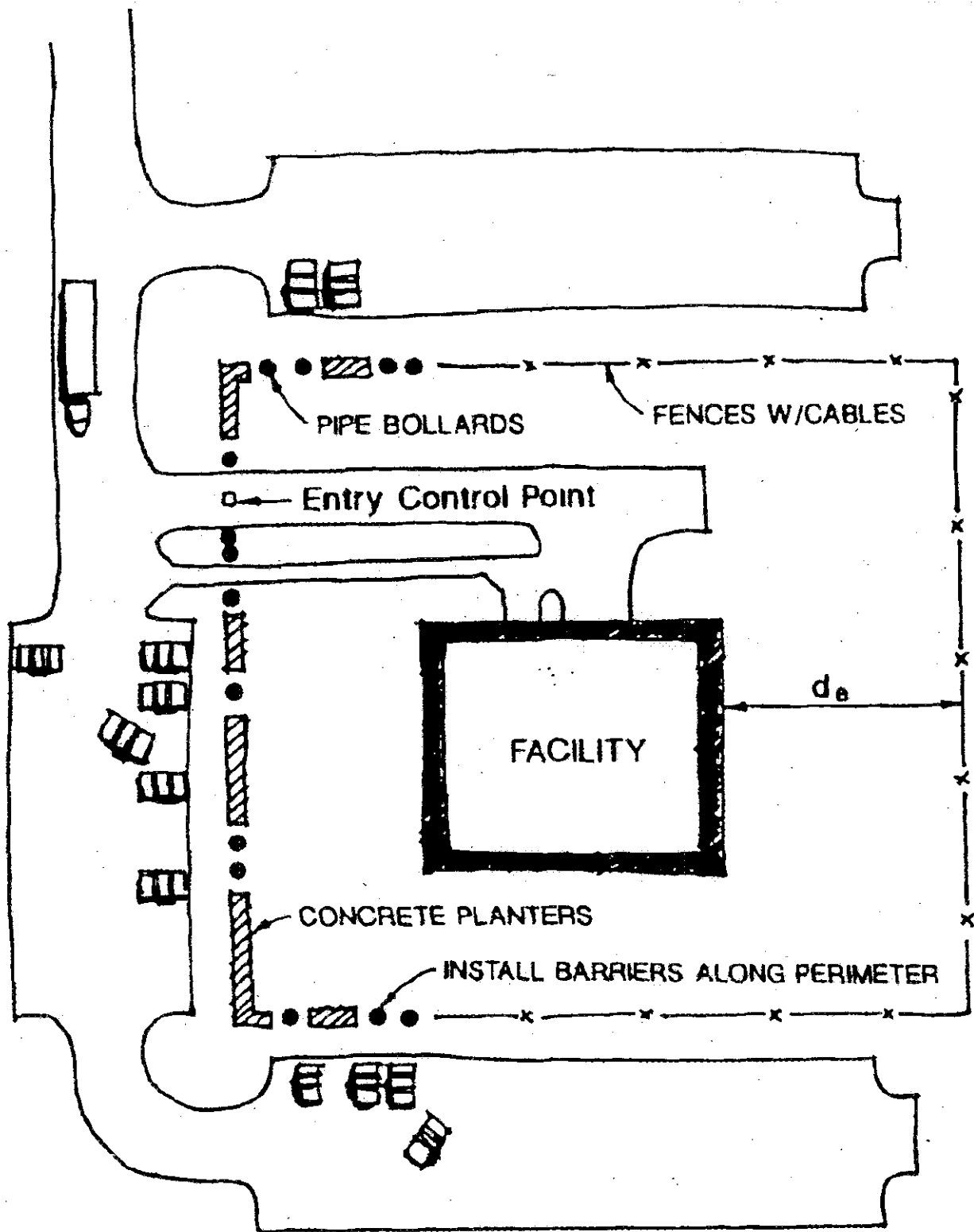
Part 2: December 16, 1999 Interim Department of Defense
Antiterrorism/Force Protection Construction Standards

PART 1: Enclosures



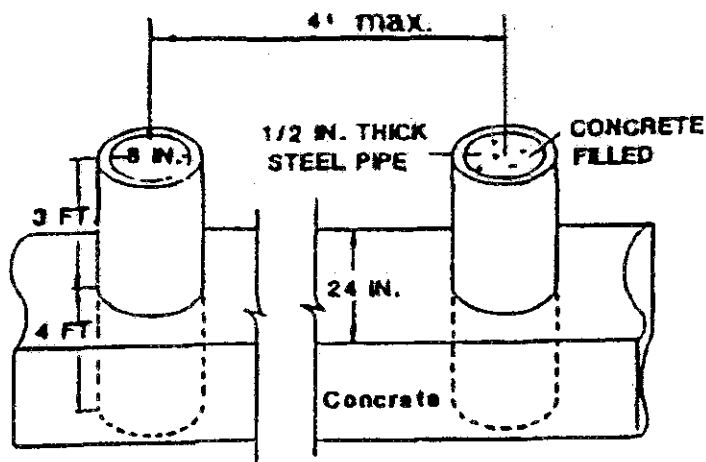
d_e = Exclusive standoff zone distance
 d_n = Non-exclusive standoff zone distance

Figure 5-2 Nonexclusive Standoff Zone.

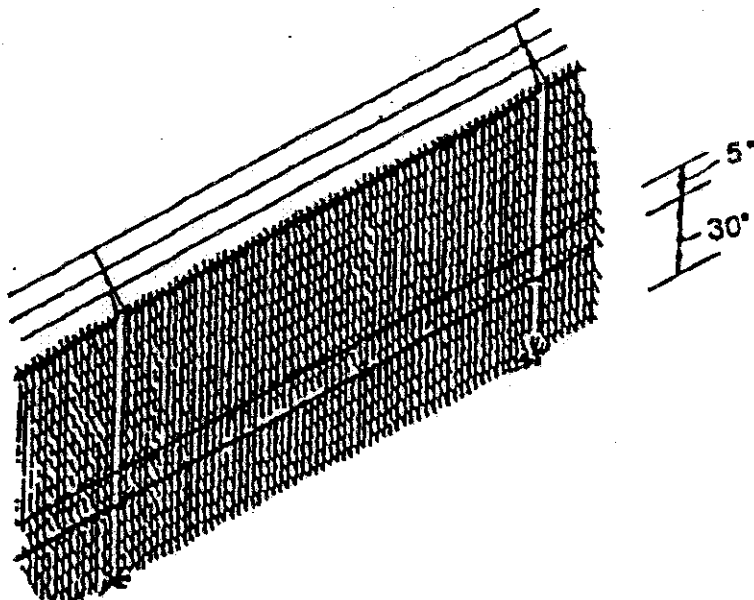


d_e = Distance from facility to exclusive zone perimeter

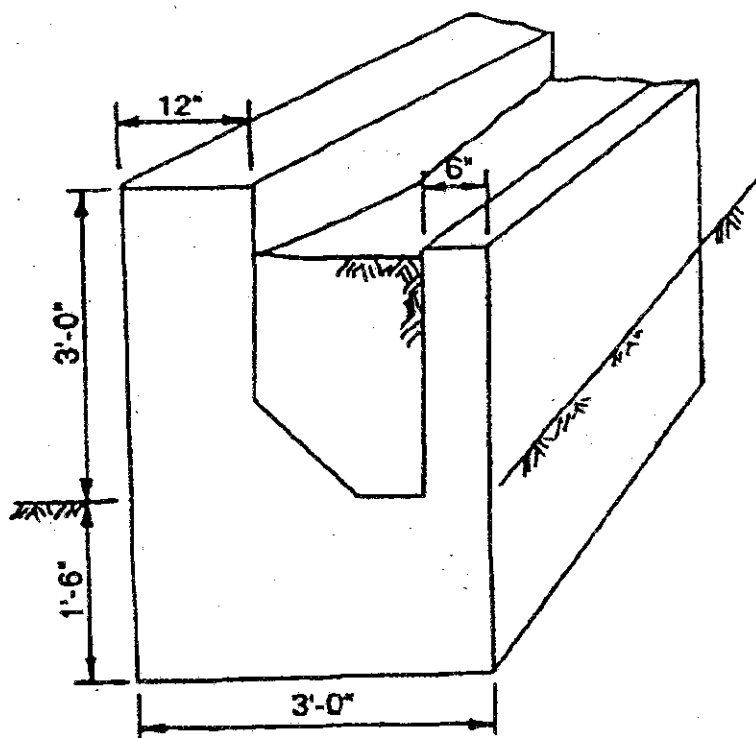
Figure 5-4. Perimeter Barrier Application.



CONCRETE-FILLED BOLLARDS



CHAIN-LINK FENCE WITH 2-3/4" DIA. CABLES

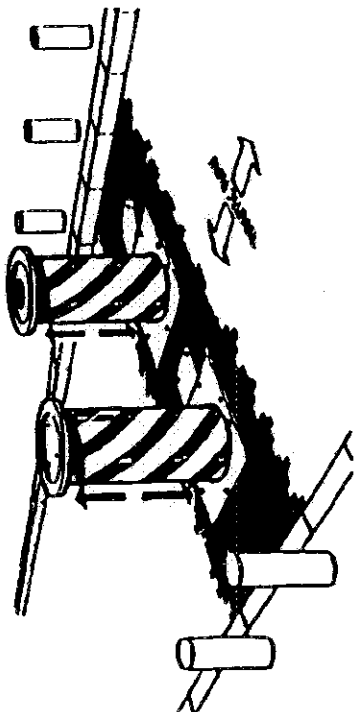


CONCRETE PLANTER

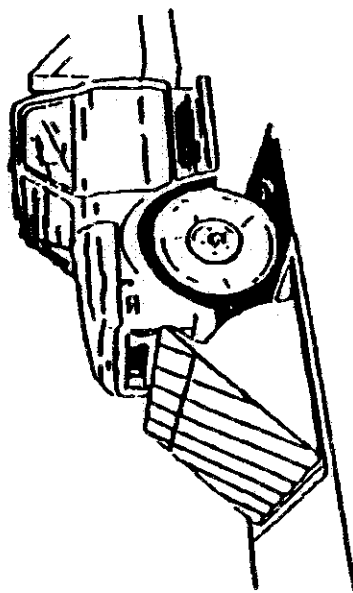
ENCLOSURE #3



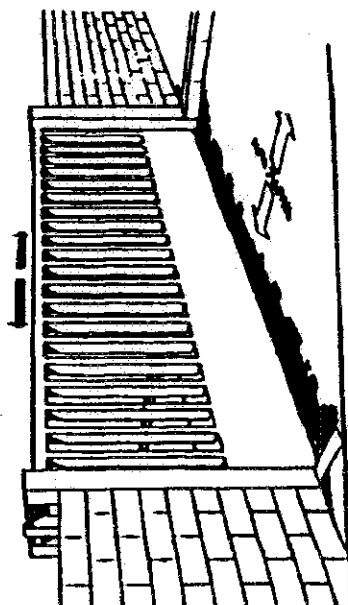
CABLE BEAM BARRIER



RETRACTABLE BOLLARDS



DRUM TYPE



SLIDING GATE

Figure 5-10. Active Vehicle Barriers

ENCLOSURE #41

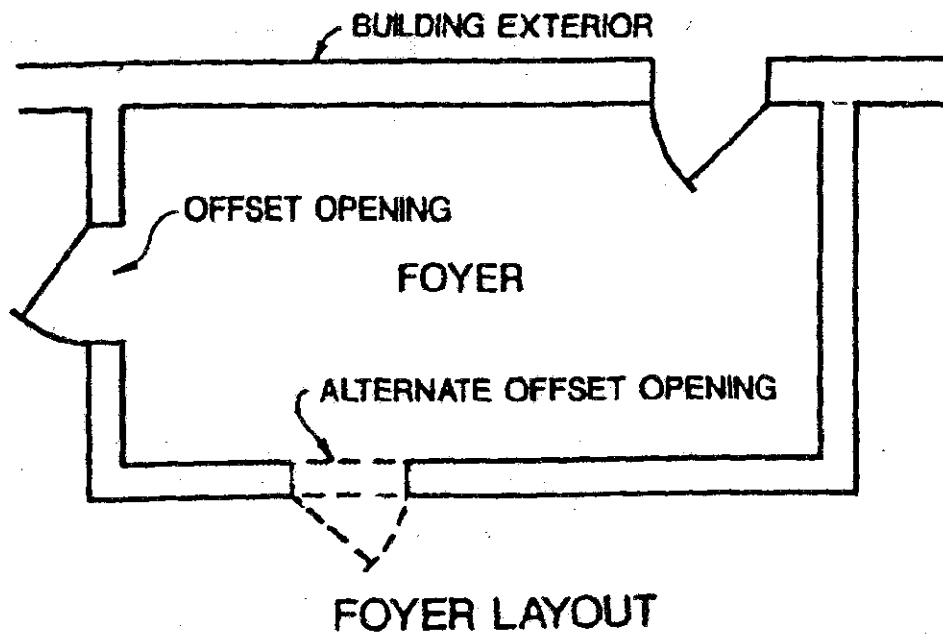


Figure 5-11. Entry Foyer

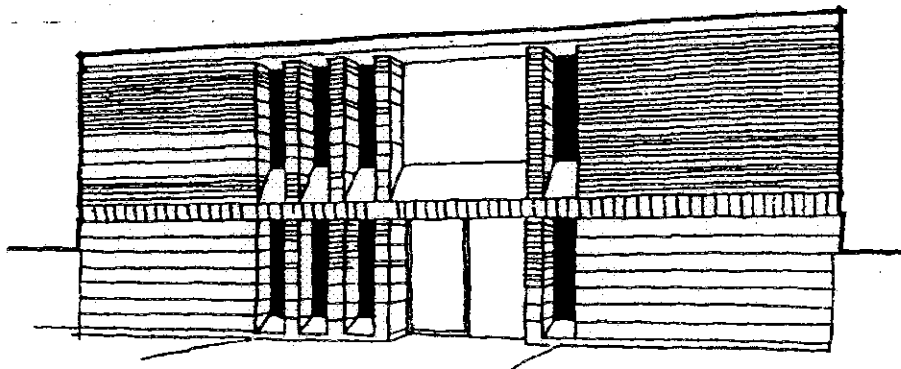


Figure 6-2 Narrowed Recessed Windows

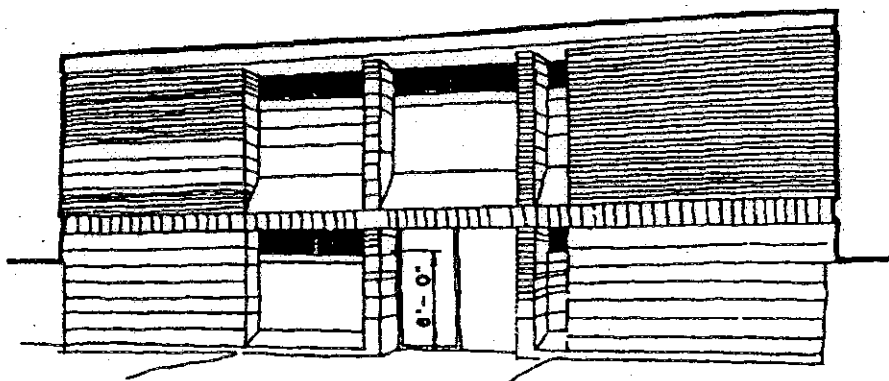


Figure 6-3 Raised Narrowed Windows.

PART 2:

December 16, 1999 Interim Department of Defense Antiterrorism/Force Protection Construction Standards



Interim Department of Defense Antiterrorism/Force Protection Construction Standards

***December 16, 1999
With errata dated 16 Feb 00***

***Deputy Under Secretary of Defense for
Installations***

FOR OFFICIAL USE ONLY

FOREWORD

This document is issued under the authority of DoD Instruction Number 0-2000.16, "DoD Combating Terrorism Program Standards," May 10, 1999. DoD Instruction 0-2000.16 established DoD Standard 20, which requires the development of antiterrorism/force protection guidelines for new construction. This interim standard implements the requirement to provide guidance for the minimum construction requirements that should be incorporated into all inhabited new construction and major renovations funded under the Military Construction (MILCON) appropriation.

This document applies to the Office of the Secretary of Defense (OSD); the Military Departments (including their National guard and Reserve components); the Chairman, Joint Chiefs of Staff and Joint Staff; the Combatant Commands; and the Defense Agencies (hereafter referred to collectively as "DoD Components").

This document is effective immediately and is mandatory for use by all the DoD Components.

Send recommended changes to this document to:

**Office of the Under Secretary of Defense for Installations
Attn: Chairman, Security Engineering Working Group
3340 Defense Pentagon, Room 3E1074
Washington, DC 20301-3340**

The DoD Components may obtain copies of this document through the U.S. Army Engineer District, Omaha, ATTN: CENWO-ED-ST, 215 North 17th Street, Omaha, NE 68102-4978.

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REFERENCES

- (a) DoD Directive 5200.8R, "Physical Security Program," May, 1991.
- (b) DoD Instruction 2000.16, "DoD Combating Terrorism Program Standards," with Change 1, May 10, 1999.
- (c) FMR, Part 7000.14R, "DoD Financial Management Regulation," April 1998.
- (d) Technical Manual 5-853-1/Air Force Manual 32-1071, Volume 1, Security Engineering - Project Development (For Official Use Only), May 1994.
- (e) Technical Manual 5-853-2/Air Force Manual 32-1071, Volume 2, Security Engineering - Concept Design (For Official Use Only), May 1994.
- (f) Technical Manual 5-853-3/Air Force Manual 32-1071, Volume 3, Security Engineering - Final Design (For Official Use Only), May 1994.
- (g) Technical Instruction 809-4, Seismic Design for Buildings, December 1998.
- (h) Military Handbook 1013/1A, "Design Guidelines for Physical Security of Facilities," June 28, 1993.
- (i) User's Guide UG-2031-SHR, "User's Guide on Protection Against Terrorist Vehicle Bombs," June 1998.
- (j) User's Guide UG-2030-SHR, "User's Guide on Security Glazing Applications," June 1998.
- (k) U.S. Army Corps of Engineers Engineer Technical Letter 1110-3-498, "Design of Collective Protection Shelters to Resist Chemical, Biological, and Radiological (CBR) Agents," February 24, 1999.
- (l) U.S. Central Command Operations Order (OPORD) 97-01A, Appendix 2 to Annex C, Construction Standards (Secret), April 15, 1999.
- (m) U.S. European Command Antiterrorism/Force Protection Operations Order 99-01, Appendix 1 to Annex D, Force Protection Design Standards (For Official Use Only), May 18, 1999.
- (n) U.S. Pacific Command Antiterrorism Operations Order 5050-99, Tab B to Appendix 1 to Annex M, Construction Standards, February 10, 1999.
- (o) U.S. Southern Command Regulation 380-16, Appendix G, Military Construction Considerations, September 9, 1998.

REFERENCES

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DL1. DEFINITIONS

DL1.1. Terms used in this Manual are defined below:

DL1.1.1. Active Vehicle Barrier. A vehicle barrier which must be manually or automatically deployed in response to detection of a threat.

DL1.1.2. Aggressor. Any person seeking to compromise an asset. Aggressor categories include protesters, criminals, terrorists, and subversives.

DL1.1.3. Annealed Glass. The most common form of glass available. Depending on manufacturing techniques, it is also known as plate, float, or sheet glass.

DL1.1.4. Asset. A resource requiring protection. For this interim standard, the asset is limited to people.

DL1.1.5. Conventional Construction. Building construction including doors, windows, or manufacturers' components which is not designed to resist tools, weapons, or explosives but is designed to resist common environmental conditions.

DL1.1.6. DoD Personnel. Any U.S. military, DoD civilian, or family member.

DL1.1.7. Exclusive Standoff Zone. A controlled area surrounding a structure into which only service and delivery vehicles are allowed. The perimeter of this area is defined by perimeter barriers and is set at a standoff distance sufficient to reduce the blast effects of vehicle bomb detonations on the protected structure.

DL1.1.8. Facility. Any single building, project, or site.

DL1.1.9. Fragment Retention Film. A thin optically clear film applied to glass to minimize the spread of glass fragments when the glass is shattered. The film may also be treated with reflective coatings to provide obscuration.

DL1.1.10. Glazing. Glass, plastic, or composite sheets used in windows.

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DL1.1.11. Inhabited Structure. Structures intended to be occupied by DoD personnel with a personnel density of greater than one person per 400 square feet. This density generally excludes industrial and storage facilities. This does not include guard type facilities, single and duplex detached family housing. It may include portions of structures in which not all areas have such population densities.

DL1.1.12. Laminated Glass. Two or more individual sheets of glass bonded together by a polyvinyl butyral (PVB) plastic interlayer.

DL1.1.13. Level of Protection. The degree to which an asset is protected against a tactic based on the asset's value. Levels of protection refer to the amount of damage a structure is allowed to sustain or the probability that an aggressor will be defeated by the protective system. Specific levels of protection are associated with each tactic.

DL1.1.14. Major Renovation. Modifications to buildings that cost in excess of 50 percent of the replacement cost of the building.

DL1.1.15. Minimum Standards. Protective measures to be applied to all inhabited structures or billeting or primary gathering structures regardless of the identified threat. These measures provide a degree of protection that will not preclude direct effects of blast, but will minimize collateral damage of buildings and people and will limit progressive collapse of structures. They add relatively little additional cost, and they may also facilitate future upgrades and deter acts of aggression.

DL1.1.16. Nonexclusive Standoff Zone. A controlled area used in conjunction with an exclusive standoff zone which provides less restrictive land use than an exclusive standoff zone. Cars (but not trucks) may be granted uncontrolled access to a nonexclusive standoff zone. The nonexclusive standoff zone perimeter is defined by barriers and set at a standoff distance sufficient to reduce the blast effects of a truck bomb detonation on the protected structure.

DL1.1.17. Passive Vehicle Barrier. Any perimeter barrier that serves the function of arresting or impeding vehicular movement and that is non-movable.

DL1.1.18. Perimeter Barrier. A fence, wall, passive vehicle barrier, landform, or line of vegetation applied along an exterior perimeter used to obscure vision, hinder personnel access, or hinder or prevent vehicle access.

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DL1.1.19. Permanent Structure. All structures intended for use by DoD personnel for more than three years. They are normally, but not exclusively, structures designed with masonry exteriors.

DL1.1.20. Planning Team. The team responsible for criteria development on a project and for generating all of the necessary programming documents. The installation project planning team typically consists of a facilities planner, and representatives from security forces, force protection, intelligence, logistics, operations, and the facility user.

DL1.1.21. Primary Gathering Structures. A subset of inhabited structures in which 50 or more DoD personnel routinely gather (e.g., office buildings, and indoor recreation facilities).

DL1.1.22. Protective Measures. Elements of a protective system which protect an asset against a threat. Protective measures are divided into defensive and detection measures.

DL1.1.23. Protective System. An integration of all of the protective measures required to protect an asset against the range of threats applicable to the asset.

DL1.1.24. Standoff Distance. A distance maintained between a structure or inhabited portion of a structure and the potential location for an explosives detonation to reduce the explosives' blast effects on the structure. Standoff distances required vary with building component construction.

DL1.1.25. Tactics. The specific methods of achieving the aggressor's goals to injure personnel, destroy military assets, or steal military materiel or information.

DL1.1.26. Temporary Structures. Structures intended for use for a period of 3 years or less, and are not expeditionary. These structures are often capable of being relocated such as some pre-engineered buildings, trailers, and stress tension shelters.

DL1.1.27. Troop Billeting Structure. A subset of inhabited structures in which DoD personnel are billeted, not to include military family housing.

DL1.1.28. Threat Severity Levels. Levels within each tactic which correspond to different sets of tools, weapons, and explosives. The

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severity of effects of the tools, weapons, and explosives increases with increasing threat severity levels.

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C1. CHAPTER 1

CONSTRUCTION STANDARDS

C1.1. GENERAL.

C1.1.1. Recent terrorist attacks have demonstrated the vulnerability of U.S. military and civilian personnel and the facilities where they work and live. A heightened awareness of the terrorist threat has prompted the Department of Defense (DoD) to find methods to reduce injuries and death in the event of future attacks. To address that issue, DoD Instruction 2000.16 (reference a) established DoD Standard 20, which requires the development of antiterrorism/force protection guidelines for new construction. This interim standard partially implements that requirement.

C1.1.2. The purpose of this standard is to ensure that force protection standards are incorporated into the planning, programming, and budgeting for the design, and construction of Military Construction (MILCON) funded facilities. This interim standard will be updated with the completion of the first volume of the DoD Security Engineering Manual. This standard includes minimum construction requirements that will be incorporated into all inhabited new MILCON construction and major renovations regardless of the threat level. It also addresses measures that can be applied where higher threat levels apply. Inhabited structures are defined for the purposes of this standard as structures occupied by DoD personnel with a personnel density of greater than one person per 400 square feet. This density generally excludes industrial and storage facilities and also does not cover guard facilities or family housing. The standard also provides additional guidance for troop billeting and primary gathering structures, a special case of inhabited structures.

C1.1.3. This interim construction standard addresses what could effectively be addressed in the short term and what the Chairman of the Joint Chiefs of Staff wanted to be covered as soon as possible. It applies to all DoD agencies and services with MILCON programming, design, or construction responsibilities. It applies to new MILCON construction and major renovations for inhabited structures both within and outside the continental United States funded under the MILCON appropriation for fiscal year 2002 and beyond. This interim standard is the minimum set for DoD. Each Commander-in-Chief (CINC) may set more stringent AT/FP construction standards to meet the specific threats in that CINC's area of responsibility.

C1.2. SCOPE.

C1.2.1. This standard provides guidance to:

C1.2.1.1. Specify the planning, engineering, design, and construction criteria for incorporating force protection requirements into MILCON projects.

C1.2.1.2. Provide a process and a tool for incorporating force protection costs into DD Form 1391 for MILCON projects.

C1.2.2. This standard establishes minimum construction standards for all DoD inhabited structures with additional requirements for troop billeting and primary gathering structures.

C1.3. CONSTRUCTION STANDARDS.

C1.3.1. Minimum Standards. Minimum standards apply regardless of the identified threat. Where there is no specific threat identified and you meet minimum standoff distances in Appendix 2, add approximately 0.5 percent of facility cost for one- and two-story buildings, except for administrative buildings and 1 percent for administrative buildings and buildings of three or more stories). The minimum standards include application of effective layout or prudent use of elements not specifically required to mitigate threats. They also may facilitate future upgrades and increased threat conditions (THREATCON) and may deter acts of aggression. Minimum standards are addressed in detail in Appendix 2. Those measures are to be considered minimum construction standards that will be incorporated into all new construction and major renovations for inhabited structures. Appendix 2 includes additional protective measures for troop billeting and primary gathering structures, a critical subset of inhabited structures.

C1.3.2. Threat Specific Standards. In addition to the minimum standards described above this interim standard provides guidance for incorporating additional measures to mitigate specific threats. That guidance includes design strategies for mitigating the effects of specific aggressor tactics to defined levels of protection and the effect on building cost of applying those measures. Refer to Appendix 1 for design strategies and Appendices 3 and 4 for guidance on determining cost.

C1.4. RECORDING FORCE PROTECTION COSTS ON DD FORM 1391.

C1.4.1. The following provides interim guidance for recording costs for force protection on DD Form 1391 in accordance with DoD FMR 7000.14R (reference b). It should not supercede any service or agency guidance on filling out DD Form 1391. Instructions for determining the costs to which this paragraph refers are included in Appendix 4.

C1.4.1.1. Where there is no specific threat identified and one meets minimum standoff criteria in Appendix 2, add 0.5 percent to the primary facility costs for buildings of one or two stories and add 1 percent for buildings of three or more stories. There are instances where threat criteria costs may or may not be additive with the minimum standards costs. Table AP4.T3 summarizes the application of minimum criteria and multiple threat costs integration. Enter the percentage as described below.

C1.4.1.2. Where there is a specific threat identified, enter the enhanced construction cost for the building as a cost per square foot as a separate line item under "Primary Facility" on the DD Form 1391. The line item should be titled "Antiterrorism Force Protection/Physical Security Measures." Those costs should include measures such as special structural improvements and bullet resistant glass, etc. They should not include costs for security measures that are mandated elsewhere.

C1.4.1.3. Where there is a specific threat identified that includes blast, the 0.5 to 1 % minimum criteria cost is included in the tables addressed in AP4.T4.

C1.4.1.4. Where there is a specific ballistics threat but not a blast threat, than the 0.5 to 1% minimum criteria cost must be added to the costs for ballistics protection. Where combination threats exist for both ballistics and blast, the cost tables values are additive.

C1.4.1.5. Where land acquisition serves a specific purpose such as providing standoff distance for force protection, the acquisition shall be listed as a separate antiterrorism/force protection line item under the primary facility.

C1.4.1.6. Where applicable, enter costs for site improvements for antiterrorism/force protection that are specifically applied to mitigate the effects of a threat (such as the vehicle barriers, fencing, berms, and landscaping, etc.) on a separate line item under "Supporting Facilities" on the DD Form 1391. Use the same title used for the primary facility.

C1.4.1.7. List the specific antiterrorism/force protection measures and considerations that the project provides in the applicable paragraph of the DD Form 1391 in accordance with component guidance. Include reference to the design criteria used to determine the enhanced costs.

C1.5. ADDITIONAL ASSISTANCE. Additional assistance in applying this standard is available from the sources listed in Table C1.T1.

Table C1.T1. List of Sources

Component	Organization	Point of Contact	Phone Number	E-Mail Address
DoD Agencies	Joint Staff (J-34)	LTC Vincent Kam	(703) 693-7551 ext 119	kamvw@js.pentagon.mil
Air Force	Air Force Civil Engineer Support Agency	Mr. James Lafrenz	(850) 283-6332	jim.lafrenz@afcesa.af.mil
Army	HQ Corps of Engineers	Mr. Ray Navidi	(202) 761-0223	ray.g.navidi@usace.army.mil
	Corps of Engineers Protective Design Center	Mr. Curt Betts	(402) 221-4918	curt.p.betts@usace.army.mil
Marine Corps	HQ U.S. Marine Corps (POS)	Capt Thomas Mockbee	(703) 614-4177 ext 114	Mockbeeth@hqmc.usmc.mil
	HQ U.S. Marine Corps Land Use and Military Construction Branch	Ms. Jane Brattain	(703) 695-8321	Brattainhj@hqmc.usmc.mil
Navy	NCIS/N-34	Mr. Bruce Bittenbender	(202) 433-9087	Bbitten@ncis.navy.mil
	Naval Facilities Engineering Service Center	Mr. Mitch Hardin	(805) 982-1571	hardinmd@nfesc.navy.mil

AP1. APPENDIX 1

PLANNING AND DESIGN STRATEGIES

AP1.1. INTRODUCTION. The design strategies presented in this appendix apply to the development of protective measures beyond the minimum standards. Summaries of design strategies are provided to help one understand the basis for determining the costs of mitigating the effects of the tactics included in this standard. They include both the basic design strategies and the more specific design strategies associated with different levels of protection. By understanding the levels of protection one will know what risks are associated with each level. These strategies are discussed in more detail in references d, e, and f.

AP1.2. VEHICLE BOMB TACTICS.

AP1.2.1. Vehicle bomb tactics include moving and stationary vehicle bombs. In both of these tactics, aggressors attack facilities to destroy, damage, injure, or kill people or assets within them using a vehicle laden with explosives. In the moving vehicle bomb tactic, the aggressor drives the vehicle into the target structure and detonates the explosives. In the stationary vehicle bomb tactic, the aggressor parks the vehicle near the structure and detonates the explosives remotely or by a time delay. When one threat severity level is selected, the threat also includes all lower threat severity levels. The basic design strategy and levels of protection are described below.

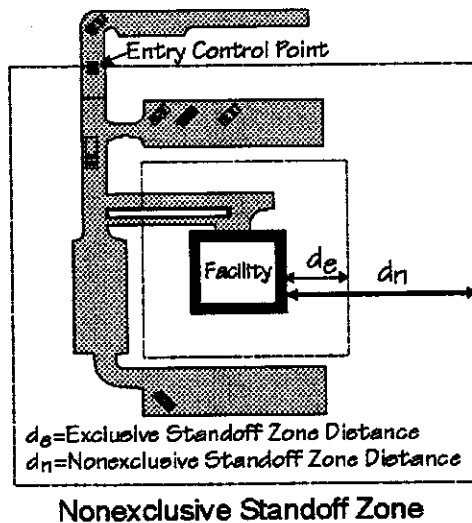
AP1.2.1.1. Standoff Distance. Blast pressures near an exploding vehicle bomb are very high, but they decrease rapidly with distance from the explosion. The design strategy for these tactics is to maintain as much standoff distance as possible between the vehicle bomb and the structure and then, if necessary, to harden the structure for the resulting blast pressures. The standoff distance will be considered to be the distance from the face of the target structure (at any point) to the point on the site at which you can effectively establish a perimeter within which you can control vehicle access. Alternatively, where there is an area of a structure that does not meet the requirements of an inhabited structure, that area can be considered to be part of the standoff distance. In that case, the standoff distance would be from the site perimeter to the face of that portion of the structure constituting the inhabited structure. The standoff distance is maintained by barriers on the perimeter of the resulting standoff zone. See the passive vehicle barrier cost graph in Appendix 4 (Table AP4.T.22.) to establish perimeter cost for a facility.

AP1.2.1.1.1. Exclusive Standoff Zone. Exclusive standoff zones may be used at all threat severity levels. Only emergency response, delivery, and service vehicles are allowed into the exclusive standoff zone. Give special consideration to allowing unimpeded access to the exclusive standoff zone for emergency response vehicles.

AP1.2.1.1.2. Nonexclusive Standoff Zone. Nonexclusive standoff zones may be used for the high, very high, and special case threat severity levels to minimize limitations on land use. Where the nonexclusive standoff zone is employed, it encloses an exclusive standoff zone. The inner perimeter is set at the distance associated with the 220 pound TNT threat and the outer perimeter is set at the distance associated with the truck bombs. Cars can enter the outer perimeter with only cursory visual searches, but are not allowed within the inner perimeter. Trucks cannot enter the outer perimeter without being searched. Note that these searches require manpower, which is not accounted for in this standard.

AP1.2.1.2. Vehicle Barriers. The difference between the moving and stationary vehicle bomb tactics is that the aggressor using the moving vehicle bomb tactic will attempt to crash through the vehicle barriers, and the aggressor using the stationary vehicle bomb tactic will not. Therefore, vehicle barriers for the moving vehicle bomb tactic must be capable of stopping the moving threat vehicle at the perimeter of the standoff zone. For the stationary vehicle bomb tactic, vehicle barriers must mark the perimeter of the standoff zone but are not required to stop the moving threat vehicle. Perimeter barriers extend around the entire perimeter ending only at entry points. They are applied for both non-exclusive and exclusive standoff zones. Active barriers are installed at all entry points and can be raised or lowered to allow vehicles to pass. See Figure AP1.F1. For barriers to resist the moving vehicle tactic, including means to slow vehicle approach will decrease the requirements for both perimeter and active vehicle barriers.

Figure AP1.F1. Nonexclusive Standoff Zone



AP1.2.1.3. Levels of Protection.

AP1.2.1.3.1. Low Level of Protection: Damaged, Unrepairable.

The structure or protected space will sustain a high degree of damage without collapse. Although collapse is prevented, occupants may be injured and other assets may be damaged but will survive. Damaged building components, including structural members, will require replacement. Depending on the scale of the blast damage, its location, and structure characteristics, the structure may be completely unrepairable, requiring demolition and replacement. The damage allowed may make surviving assets vulnerable to subsequent attack. Majority of personnel will suffer lacerations and blunt trauma from window glazing fragments and other non-structural debris.

AP1.2.1.3.1.1. Windows will break and be propelled into the room up to a few feet.

AP1.2.1.3.1.2. Doors will only be hollow metal.

AP1.2.1.3.2. Medium Level of Protection: Damaged, Repairable. The structure or protected space will sustain a significant degree of damage, but the structure will be reusable. Occupants and other assets may sustain minor injuries or damage. Damaged building components other than structural members may require replacement, but damaged structural members can be repaired. Personnel will suffer mostly minor and some serious lacerations and blunt trauma from window glazing fragments and non-structural debris.

AP1.2.1.3.2.1. Windows will break, but will not fall out of the frame.

AP1.2.1.3.2.2. Doors will be blast resistant.

AP1.2.1.3.3. High Level of Protection: Superficial Damage. The structure or protected space will sustain only superficial damage. Occupants and other assets will also incur only superficial injury or damage. Personnel will suffer only minor lacerations and blunt trauma from window glazing fragments and non-structural debris.

AP1.2.1.3.3.1. Windows will not break.

AP1.2.1.3.3.2. Doors will be blast resistant.

AP1.3. PLACED BOMB TACTIC. In this tactic the aggressor carries an explosive device up to a structure, places it, and detonates it either remotely or on a time delay. The basic design strategy is to establish a standoff zone as for the vehicle bomb tactics and maintain it with a fence. Levels of protection are the same as the vehicle bomb tactics.

AP1.4. **BALLISTICS TACTIC**. In this tactic aggressors fire small arms at assets within the structure. The basic design strategy is dependent on the level of protection. The strategy for the low level of protection is predicated on the assumption that aggressors will not shoot at what they cannot see; therefore, protection is limited to obscuring the assets from views from outside the building. Obscuration might be achieved by installing reflective fragment retention film on the windows and glazed doors of the building or blocking sightlines from uncontrolled vantage points with vegetation, walls, or other structures. At the high level of protection the design strategy involves ensuring that all building components, including windows and doors are bullet resistant.

AP2. APPENDIX 2

DOD ANTITERRORISM/FORCE PROTECTION MINIMUM STANDARDS

AP2.1. SECURITY ENGINEERING STANDARD 1: SITEWORK.

AP2.1.1. Facility Access.

AP2.1.1.1. Eliminate, minimize, or mitigate lines of approach perpendicular to inhabited structures.

AP2.1.1.2. Minimize vehicle access points.

AP2.1.1.3. Coordinate with the installation master plan to site facilities with large non-DoD visitor populations away from inhabited structures where possible.

AP2.1.2. Facility Characteristics.

AP2.1.2.1. Avoid conditions within 30 feet of inhabited structures that permit concealment of aggressors or that would obscure the view of objects or packages 6 inches in height from the view of security personnel.

AP2.1.2.2. Minimize exposure to surveillance and observation of assets within inhabited structures from uncontrolled natural or man-made vantage points.

AP2.1.3. Facility Standoff / Separation. Facility standoff distances are intended to prevent the progressive collapse of structures. For all cases below, standoff distances will be to the face of that portion of a structure that meets the criteria of an inhabited structure or a troop billeting or primary gathering structure. Portions of structures with lesser occupancies may be located within the stated standoff distances. ~~When the standoff distance is not available, select a cost for the low level of protection against a 50 pound TNT explosive at the available standoff. Costs to achieve the low level of protection are included in Appendix 4. For design purposes, design the structure to sustain an equivalent degree of damage to what it would experience from a 50 pound TNT explosive placed at 80 feet.~~ Facility standoff distances are intended to prevent the progressive collapse of structures. For all cases below, standoff distances will be to the face of that portion of a structure that meets the criteria of an inhabited structure or a troop billeting or primary gathering structure. Portions of structures with lesser occupancies may be located within the stated standoff distances.

AP2.1.3.1. Maintain a minimum standoff distance of 80 feet from inhabited structures to installation perimeters. When the standoff distance is not available, select a cost for the low level of protection against a 50 pound TNT explosive at the available standoff. Costs to achieve the low level of protection are included in Appendix 4. For design purposes, design the building elements to sustain an equivalent degree of damage to what it would experience from a 50 pound TNT explosive placed at 80 feet.

AP2.1.3.2. For troop billeting and primary gathering structures, maintain a minimum standoff distance of 150 feet from the structures to installation perimeters. When the standoff distance is not available, select a cost for the low level of protection against a 220 pound TNT explosive at the available standoff. Costs to achieve the low level of protection are included in Appendix 4. For design purposes, design the building elements to sustain an equivalent degree of damage to what it would experience from a 220 pound TNT explosive placed at 150 feet.

AP2.1.3.3 Locate trash containers at least 30 feet from inhabited structures.

AP2.1.3.4. Locate trash containers at least 80 feet from troop billeting and primary gathering structures.

AP2.1.3.5. Maintain a minimum building separation of 50 30 feet for troop billeting and primary gathering structures.

AP2.2. SECURITY ENGINEERING STANDARD 2: PARKING AND ROADWAYS.

AP2.2.1. Parking beneath inhabited structures is strongly discouraged. If unavoidable, mitigate by designing columns assuming loss of lateral support at any one floor level (i.e., a laterally unsupported length equal to two stories) to avoid progressive collapse and control access to the parking structure.

~~AP2.2.2. To limit the possibility of progressive collapse, locate parking lots and roadways at least 30 feet from inhabited structures and 80 feet from troop billeting and primary gathering structures. The standoff distance from roadways is measured from the nearest edge of pavement. Portions of structures with lesser occupancies may be located within the stated standoff distance. When the standoff distance is not available, select a cost for the low level of protection against a 50 pound TNT explosive at the available standoff. Costs to achieve the low level of protection are included in Appendix 4. For design purposes, design the structure to sustain an equivalent degree of damage to what it would experience from a 50~~

pound TNT explosive placed at 80 feet. Roadways and parking shall not be closer than 30 feet to any inhabited structure.

AP2.3.3. To limit the possibility of progressive collapse, locate parking lots and roadways at least 80 feet from troop billeting and primary gathering structures. The standoff distance from roadways is measured from the nearest edge of pavement. Portions of structures with lesser occupancies may be located within the stated standoff distance. When the standoff distance is not available, select a cost for the low level of protection against a 50 pound TNT explosive at the available standoff. Costs to achieve the low level of protection are included in Appendix 4. For design purposes, design the structure to sustain an equivalent degree of damage to what it would experience from a 50 pound TNT explosive placed at 80 feet.

AP2.3. SECURITY ENGINEERING STANDARD 3: BUILDING LAYOUT.

AP2.3.1. Minimize or mitigate exposure of personnel in inhabited structures to potential glass fragment hazards.

AP2.3.2. Design circulation within inhabited structures to provide detection of people approaching controlled areas or occupied spaces.

AP2.3.3. Locate activities with large non-DoD visitor populations within or around inhabited structures away from protected assets where possible.

AP2.3.4. When possible, position exterior doors on inhabited structures so they cannot be easily targeted from the installation perimeter or uncontrolled vantage points.

AP2.4. SECURITY ENGINEERING STANDARD 4: SUPERSTRUCTURE.

AP2.4.1. Structural. The intent of these requirements is to minimize the possibility of progressive collapse. Where these requirements cannot be met for major MILCON funded renovations or existing structures, design the renovation to provide as much mitigation as is practical.

~~AP2.4.1.1. For inhabited structures of three stories or more, use a moment resisting frame support system and design in structural redundancy that allows the loss of one primary vertical or one primary lateral load-carrying element without progressive collapse.~~ For all inhabited structures of three stories or more, design to sustain local damage with the structural system as a whole remaining stable and not being damaged to an extent disproportionate to the original local damage. This shall be achieved through an arrangement of the structural elements that provides stability to

the entire structural system by transferring loads from any locally damaged region to adjacent regions capable of resisting those loads without collapse. This shall be accomplished by providing sufficient continuity, redundancy, or energy dissipating capacity (ductility) or a combination thereof, in the members of the structure. That analysis will include removal of one primary vertical or one primary lateral load-carrying element without progressive collapse. For further guidance, refer to American Society of Civil Engineers Standard 7-95, Minimum Design Loads for Buildings and Other Structures.

AP2.4.1.2. For all multistory inhabited structures, design all multistory vertical load carrying elements assuming loss of lateral support at any one floor level (i.e., a laterally unsupported length equal to two stories).

AP2.4.1.3. Exterior masonry walls will be reinforced in all inhabited structures.

AP2.4.1.4. On multistory inhabited structures, run concrete floor slab reinforcement continuously through both faces of the slab and into the beams and columns to improve capability to withstand load reversals.

AP2.4.1.5. Exterior walls in inhabited structures will employ one-way wall elements spanning vertically to minimize blast loads on columns.

AP2.4.1.6. Structurally separate portions of inhabited structures with lesser occupancies from the inhabited portions of the structure when portions with lesser occupancies are located within prescribed standoff distances.

AP2.4.2. Non-structural. Attach interior ceiling mounted fixtures to the supporting structural system (i.e., use seismic detailing from Technical Instruction 809-4) in inhabited structures. This includes suspended ceilings, light fixtures, and mechanical and electrical ducting and pipes.

AP2.4.3. Exterior Windows. For single glazed windows in inhabited structures, use a minimum of 1/4-inch (6-mm) annealed laminated glass. For insulated glass units, the inner pane should be a minimum of 1/4-inch (6-mm) annealed laminated glass.

AP2.4.4. Exterior Doors. Use a minimum of 1/4-inch (6-mm) annealed laminated glass for exterior door glazing in inhabited structures.

AP2.5. SECURITY ENGINEERING STANDARD 5: MAILROOMS.

AP2.5.1. Avoid routing key utilities (including communications, fire detection and alarm, water mains, etc.) through or on common walls to mailrooms in inhabited structures.

AP2.5.2. Locate mailrooms on perimeters of inhabited structures.

AP2.6. SECURITY ENGINEERING STANDARD 6: MECHANICAL AND UTILITY SYSTEMS.

AP2.6.1. Locate air intakes above the first story ceiling (for two-story or higher inhabited structures) or on the roof of single-story inhabited structures , and restrict access to the intakes.

AP2.6.2. Control access to roofs of inhabited structures. Avoid external ladder access by providing entry from internal stairways or ladders such as in mechanical rooms. Alternatively, secure external ladders.

AP2.6.3. Include an emergency shutoff switch in the control system that immediately shuts down the heating, ventilation, and air conditioning (HVAC) system of inhabited structures.

AP2.6.4. Ensure that redundant utilities in inhabited structures do not run in the same locations or chases.

AP2.6.5. Secure exterior access to power/heat plants, gas mains, water supplies, communications, electrical service, or other support facilities or infrastructure.

AP2.6.6. Construct fire protection systems in inhabited structures using seismic detailing.

AP3. APPENDIX 3

THREAT SPECIFIC CONSTRUCTION GUIDANCE

AP3.1. THREAT SPECIFIC CONSTRUCTION GUIDANCE. The security engineering documents listed as references d through f and h (Army TM 5-853/Air Force AFMAN 32-1071 series and the Navy MIL HNDBK 1013/1A) provide detailed guidance for developing protective measures to mitigate the effects of the threats described by this standard. Those documents will be considered to be the acceptable means of implementing this standard and for developing protective measures for DoD assets associated with new construction and major renovations for inhabited structures. References i and j can also be used. In addition to the guidance presented in this standard and in its references, the costs for protection can be further optimized by having a qualified team perform vulnerability assessments of sites.

AP3.2. ANTITERRORISM/FORCE PROTECTION DESIGN CRITERIA.

AP3.2.1. Planning and design criteria are developed and recommended for projects by local planning teams. These criteria must include the elements described below. Detailed discussion of these issues may be found in TM 5-853-1/AFMAN 32-1071, Volume 1 and MIL HNDBK 1013/1A. For areas within specific CINC's areas of operations, refer to the applicable CINC Operations Orders or regulations (references l through o) for guidance.

AP3.2.1.1. Assets. The user must identify the assets to be protected and the design criteria must be focused on those assets. This interim standard focuses on people as assets, as opposed to buildings, equipment, or other objects. It does not preclude providing antiterrorism/force protection for mission critical or otherwise important assets.

AP3.2.1.2. The Design Basis Threat. Threat that generates requirements for design must be described by the installation commander in terms of the tactics aggressors are likely to use in attempting to compromise assets and the weapons, tools, and explosives that they will use in carrying out those tactics. For this interim standard, those threats will be limited to explosives and ballistics threats. Additional threats will be addressed in the DoD Security Engineering Manual. The explosive threats in this standard may include both vehicle and placed bombs. The tactics and threat parameters addressed in this interim standard are described below. The specific

threat parameters associated with those tactics are described by threat severity levels of low, medium, high, very high, and special case as detailed in Table AP3.T1. Design basis threats are not the same as the National Threat Level Systems. While national level threats apply to a geographic area, design basis threats apply to specific assets within facilities.

AP3.2.1.2.1. Vehicle Bomb Tactic. This can take the form of either a moving or stationary vehicle bomb. In a moving vehicle bomb scenario an aggressor drives an explosive laden vehicle into a target structure or along a target perimeter road and detonates it. In the stationary vehicle bomb scenario the aggressor parks an explosive laden vehicle near a target structure, leaves, and detonates the explosive either remotely or on a time delay.

AP3.2.1.2.2. Placed Bomb Tactic. In this tactic the aggressor carries a man portable explosive to a structure and places it in a position near the structure. The bomb is either detonated remotely or via a time delay. This tactic is referred to as the exterior tactic in TM 5-853-1 / AFMAN 32-1071, Volume 1. It is included under the stationary tactic in MIL HNDBK 1013/1A.

Table AP3.T1. Threat Parameters (Interim Standard)

Tactic	Threat Severity Level	Weapon	Tool
Vehicle bomb	Special Case	20,000 pounds TNT	60,000-pound truck
(Moving and Stationary)			
	High	1000 pounds TNT	5000-pound truck
	Medium	500 pounds TNT	4000-pound car
	Low	220 pounds TNT	4000-pound car
	Minimum	50 pounds TNT	4000-pound car
Placed bomb		50 pounds TNT	
Mail bomb		2 pounds TNT	
Ballistics	Very high	7.62 mm Armor Piercing	
	High	7.62 mm	
	Medium	.44 Magnum	
	Low	.38 Special	

AP3.2.1.2.3. Mail Bomb. In this tactic aggressors deliver bombs or incendiary devices to the target in letters or packages.

AP3.2.1.2.4. Ballistics Tactic. In this tactic aggressors fire small arms at target facilities with the intent of hitting people inside the facilities.

AP3.2.1.2.5. Chemical, Biological, and Radiological Threats. These threats can come from a wartime attack, a terrorist attack, or from an industrial accident.

AP3.2.1.3. Levels of Protection. Levels of protection addressed by this interim standard reflect the degree to which the assets will be protected against the threat. These levels of protection reflect different levels of damage to inhabited structures and injury to occupants from the effects of specific tactics. These levels of protection provide protection beyond that provided by applying the minimum standards in appendix 2. They should be applied where a design basis threat is specified by an installation planning team. The levels of protection specific to each of the above tactics and the level of protection provided by applying the minimum standards are described in Table AP3.T2.

AP3.3. FORCE PROTECTION COST TOOLS.

AP3.3.1. Appendix 4 provides estimates of the costs of force protection enhancements for new construction projects subjected to threats described above. The costs in the blast tables include the costs of applying the minimum standards. The cost tables are for costs to achieve protection to levels of protection over and above those associated with applying the minimum measures in Appendix 2. The tables provide increases in the costs per square foot of floor space for a variety of construction baselines. There are separate tables for each of the threat parameters detailed above, and a separate chart for perimeter barrier costs. The costs in the cost tables reflect construction that will be adequate to mitigate the effects of the applicable threats to the applicable level of protection. Including these costs will identify funding required for force protection requirements.

Table AP3.T2. Levels of Protection

Tactic	Level of Protection	Potential Structure Damage	Potential Injury
Bombing tactics	Minimum	Significant damage, but no progressive collapse	Majority of personnel suffer serious injuries. There are likely to be a limited number of fatalities
	Low	Damaged – unrepairable No collapse, but structural members will require replacement	Majority of personnel suffer lacerations and blunt trauma injuries from window glazing and non-structural elements
	Medium	Damaged - repairable Damaged structural elements can be repaired	Mostly minor and some serious lacerations and blunt trauma from window glazing and non-structural elements
	High	Superficial damage	Only superficial lacerations and blunt trauma from non-structural elements
Ballistics tactic	Low	Limited - screening	Unlikely
	High	Superficial – hardened	None

AP3.3.2. Costs for protection against mail bombs and chemical, biological, and radiological threats are not specifically addressed in this interim standard except as measures incorporated into the minimum standards.

AP3.3.3. Appendix 1 provides descriptions of the basic design strategies used in developing the protective measures that were used as the basis for the cost calculations. The protective measures include perimeter barriers and building components designed to resist weapons and explosives effects, including walls, doors, windows, and roofs. Understanding the design strategies allows the user to understand the basis for the costs.

AP4. APPENDIX 4

COST TOOLS

AP4.1. INTRODUCTION. These tools can be used in formulating costs for antiterrorism/ force protection for MILCON projects. They are only to be used in programming for new construction. This interim standard does not include cost increases for major renovations, which are likely to be higher than those for new construction.

AP4.2. FORMULATION OF TOOLS. The tools described in this appendix were developed by determining the ballistics and blast resistance of various "hardened" building components to applicable levels of protection and estimating the costs of buildings built using those components. The relative costs of the hardened buildings were tabulated as increases over baseline costs for six common building categories in terms of percentage cost increase per square foot of floor space. The relative costs reflect all construction, labor, and material costs for the buildings. They also include the costs of applying the minimum standards in appendix 2. The costs in the tables in this appendix must be corrected with area cost factors, building area factors, escalation, and any other special construction considerations commonly programmed into DD Forms 1391 at your installation or for the applicable type of facility. The baseline construction for walls, doors, windows, and roofs for each of the six building categories is summarized below. The six structure types selected represent a majority of recent military construction. They can be used to represent other structure types that are similar from the standpoint of function and basic construction.

Table AP4.T1. Baseline Construction

Structure Category	Building Component Construction			
	Walls	Doors	Windows	Roofs
288 Person Barracks (interior corridor) (3 stories) (115,000 gross sf)	Concrete masonry unit	3' X 7' Hollow metal and 6' X 7' glazed pairs	Aluminum frame / sliding	Standing seam metal
288 Person Barracks (exterior entrances) (3 stories) (102,000 gross sf)	Concrete masonry unit	3' X 7' Hollow metal and 6' X 7' glazed pairs	Aluminum frame / sliding	Standing seam metal
Dining Facility (1 story) (14,000 gross sf)	Brick veneer / metal stud	Hollow metal and glazed, 3' X 7' & 6' X 7' pairs	Aluminum frame / fixed	Standing seam metal
Administrative Facility (2 stories) (26,000 gross sf)	Brick veneer / metal stud	Hollow metal and glazed, 3' X 7' & 6' X 7' pairs	Aluminum frame / fixed, projected, & storefront	Standing seam metal
Medical Clinic (1 story) (40,000 gross sf)	Brick veneer / metal stud	Hollow metal and glazed, 3' X 7' & 6' X 7' pairs	Aluminum frame / fixed	Built-up roofing

Special Structures	Concrete masonry unit	Hollow metal and glazed, 6' X 7' pairs	Aluminum frame / fixed	Standing seam metal
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Table AP4.T2. Examples of Facility Construction Types Represented by Baseline

Baseline Structure	Occupancy Classification	Examples of Facility Construction Types Represented
Barracks, External Entrances	Housing	<ul style="list-style-type: none"> • Enlisted Barracks • Trainee Barracks • Transient Unaccompanied Personnel Housing • Unaccompanied Enlisted/NCO/Officers Quarters
Barracks, Internal Corridor	Housing	<ul style="list-style-type: none"> • Enlisted Barracks • Trainee Barracks • Transient Unaccompanied Personnel Housing • Unaccompanied Enlisted/NCO/Officers Quarters
Administration Facility	Office	<ul style="list-style-type: none"> • Airfield Operations Building • Aviation Unit Operations Building • • Brigade/Battalion/Company Headquarters • Cargo Handling Office Building • Community Services Center • Courtroom • Dispatch Building • Emergency Operations Center • Field Operations Building • National Guard/Reserve Center • School • Child Development Center • Ship Operations Building
Medical Clinic	Medical	<ul style="list-style-type: none"> • Ambulance Garage/Fire Station/Police Station • Dental Clinic • Laboratory • Medical Center/Hospital • Pharmacy • Red Cross Building • Troop Dispensary/Health Clinic • Veterinary Facility
DINING FACILITY	Services Facility	<ul style="list-style-type: none"> • Dining Facility • Drug/Alcohol Abuse Center • Laundry
Special Structures		<ul style="list-style-type: none"> • Auditoriums • Chapels • Gymnasiums • Theaters

AP4.3. USING THE TOOLS.

AP4.3.1. Using the construction cost increase tables.

AP4.3.1.1. Select a baseline structure category using Table AP4.T1 or AP4.T2. The baseline facility types can be extrapolated with Table AP4.T2. Then

select the table that applies to the bomb size or ballistics threat and level of protection that is being programmed using Table AP4.T3 and AP4.T4 as a guide for explosives or Table AP4-T20. for ballistics.

AP4.3.2. Using the tables for bomb threats.

AP4.3.2.1. Enter the table with the standoff distance (in feet) from the site perimeter to the standoff distance will be considered to be the distance from the face of the target structure (at any point) to the point on the site at which you can effectively establish a perimeter within which you can control vehicle access. Alternatively, where there is an area of a structure that does not meet the requirements of an inhabited structure, that area can be considered to be part of the standoff distance. In that case, the standoff distance would be from the site perimeter to the face of that portion of the structure constituting the inhabited structure.

AP4.3.2.2. Follow the line to the structure category that corresponds to your facility type. That cost increase (as a percentage of the square foot cost) will correspond to the cost above "conventional construction" to provide the construction required to mitigate the postulated design basis threat to the applicable level of protection.

AP4.3.2.3. Multiply the percentage cost increase per square foot by the square foot cost for the baseline construction for the planned facility. That cost may be the baseline cost for the type of facility being programmed as found in the Military Construction Pricing Guide or other baseline cost guidance. Because these costs are presented as percentages, they are not specific to any particular year and do not have to be escalated separately from the total project cost.

AP4.3.3. Using the tables for ballistic threats.

AP4.3.3.1. Select Table AP4-T20 for the appropriate level of protection (high or low).

AP4.3.3.2. For the low level of protection, select the percentage cost increase that corresponds to your structure type.

AP4.3.3.3. For the high level of protection, select the percentage cost increase for your structure under the desired threat severity level.

AP4.3.4. Using the vehicle barrier cost chart (Figure AP4.F1.). This chart is only necessary when the moving vehicle bomb tactics apply. Note that the costs in this chart are current for Calendar Year 1999. Application for future years will require cost escalation factors.

AP4.3.4.1. Perimeter Barriers. Use the standoff distance used above to estimate the total perimeter vehicle barrier cost. Read the total cost associated with that standoff distance from figure AP4.F1 for the vehicle applicable barrier rating (refer to Table AP4.T21). Alternatively, determine perimeter length and apply the unit cost in Table AP4.T21.

AP4.3.4.2. Active Barriers.

AP4.3.4.2.1. Assume the number of egress and ingress locations through the perimeter based on traffic volume. The barrier costs as tabulated are for a 12-foot traffic lane. Commonly an entry point will have two lanes, each of which needs a barrier.

AP4.3.4.2.2. Enter the active vehicle barrier Table AP4.T22. and multiply the cost by the number of lanes assumed.

AP4.3.5. Multiple Tactic Costs. Costs associated with protecting a structure from more than one threat (i.e., ballistics and explosives) will be considered to be multiple tactic costs. In this interim standard, the costs for multiple tactics are conservatively considered to be additive. Table AP4.T3 provides a guide on the integration of multiple threats and designates costs that should be combined for the total estimate.

AP4.3.6. Vehicle Bomb Example. Consider a 288-person barracks with interior corridors for which the planning team has postulated a low threat severity level (220 pounds TNT) for the moving vehicle bomb threat. The required level of protection is low. The baseline cost is \$142 per square foot from the Military Construction Pricing Guide. The available standoff distance is limited to approximately 80 feet. Based on expected traffic to the facility, assume you will need 4 entry/exit lanes through the perimeter.

AP4.3.6.1. Determine the additional construction cost for the primary facility.

AP4.3.6.1.1. Select Table AP4.T8 that corresponds to the 220-pound explosive/low level of protection for the 288-person barracks with interior corridors.

AP4.3.6.1.2. Enter the table at the available standoff distance of 80 feet.

AP4.3.6.1.3. Read across the table to the column that corresponds with baseline facility type (barracks interior corridor) to find the percentage cost "increase." In this example it is 3.1 percent.

AP4.3.6.1.4. Determine the additional cost. 3.1 percent X \$142 per square foot is \$4.40 per square foot additional cost. That additional cost would be entered into the DD Form 1391 on the force protection line item under "primary facility."

AP4.3.6.2. Determine the vehicle barrier costs.

AP4.3.6.2.1. Determine the perimeter barrier costs by entering the perimeter barrier Figure AP4.F1. with 80 feet of standoff distance.

AP4.3.6.2.2. Read Figure AP4.F1 for an estimate for the low level of protection at 80 ft standoff: \$70,000.

AP4.3.6.3. Refer to the active barrier Table AP4.T22 at the low to medium rating and read \$25,000 per lane. Multiply \$25,000 by four lanes for a total of \$100K.

AP4.3.6.4. Total Vehicle Barrier Cost. Add the passive vehicle barrier system \$70,000 to the active vehicle barrier system \$100,000 for a total of \$170,000.

AP4.3.7. Multiple Threat Example. There is a requirement to build a dining facility that will provide a high level of protection against a medium severity level ballistic threat and a medium level of protection against a 1000-pound explosive device. Available unencumbered land will make it possible to place a perimeter around the building at a 300-foot standoff distance. The perimeter must stop a 15,000-pound truck traveling at speeds of up to 30 miles per hour. The building perimeter must have two entrances and two exits.

AP4.3.7.1. Vehicle Barrier Costs.

AP4.3.7.1.1. Active vehicle barrier cost. From Table AP4.T22, each entrance and exit lane will require an active vehicle barrier that costs approximately \$25,000. Therefore, since two entrance barriers and two exit barriers are required, \$100,000 should be planned for procurement and installation of four active vehicle barriers located around the perimeter.

AP4.3.7.1.2. Passive Vehicle Barrier Cost. From Figure AP4.F1., the passive barrier system cost for a building requiring 300 feet of standoff is \$140,000

AP4.3.7.1.3. Total vehicle barrier cost for active and passive barrier systems.

System	\$ 140,000 – Passive Vehicle Perimeter Barrier
	<u>\$ 100,000 – Active Vehicle Barrier Systems</u>
	\$ 240,000 – Total Vehicle Barrier Cost

AP4.3.7.2. Structure Hardening Cost to Protect against Explosive Attack. From Table AP4.T15, (1000 lbs TNT medium level of protection) the cost increase per square foot of floor space for a DINING FACILITY with 300 feet of standoff is 10 percent. Assuming that the average cost per square foot for a DINING FACILITY is \$209.65 per square foot, the increase is $(0.10 \times \$209.65/\text{SF} = \$20.96/\text{SF})$.

AP4.3.7.3. Structure Hardening Cost to Protect against Ballistic Attack. From Table AP4.T20, the cost per square foot increase is 3.9 percent for a DINING FACILITY that requires a high level of protection against a medium threat severity level ballistic attack. Assuming that the average cost per square foot for a DINING FACILITY is \$209.65 per square foot, the increase is $0.039 \times \$209.65/\text{SF} = \$8.18/\text{SF}$.

AP4.3.7.4. Total Facility Hardening Cost.

Ballistics Threat Cost Increase ----	\$ 8.18/SF
Explosives Threat Cost Increase --	\$20.96/SF
Total Cost Increase -----	\$29.14/SF

AP4.3.7.5. Estimated Costs for Antiterrorism/Force Protection.

\$ 240,000 – Total vehicle barrier cost

\$ 29.14/SF – Estimated additional cost of the DINING FACILITY with ballistic and blast protection.

Table AP4.T3. Minimum Criteria and Multiple Threat Costs Integration

<i>Criteria</i>	<i>Costs to be included</i>			
	Standard Cost 0.5 - 1.0 %	Blast Tables Cost AP4.T4	Ballistics Table Cost AP4.T20	Vehicle Barrier AP4.T21&22 and/or AP4.F1
Minimum Standards	X			
Minimum Standoff not met		X		
Blast Threat		X		
Ballistics Threat	X		X	
Blast and Ballistics		X	X	
Blast with Vehicle		X		X
Blast with Vehicle and Ballistics		X	X	X

Table AP4.T4. Index of Tables for Various Bomb Sizes and Levels of Protection

<i>TNT</i>	<i>Levels of Protection</i>		
	<u>Low</u>	<u>Medium</u>	<u>High</u>
50 LBS	AP4.T5	AP4.T6	AP4.T7
220 LBS	AP4.T8	AP4.T9	AP4.T10
500 LBS	AP4.T11	AP4.T12	AP4.T13
1,000 LBS	AP4.T14	AP4.T15	AP4.T16
20,000 LBS	AP4.T17	AP4.T18	AP4.T19

Table AP4.T5. 50 lbs TNT Low Level of Protection

STANDOFF DISTANCE IN FEET	Percentage Building Cost Increase					
	BARRACKS EXTERNAL ENTRANCES	BARRACKS INTERIOR CORRIDOR	DINING FACILITY	ADMIN FACILITY	MEDICAL CLINIC	SPECIAL STRUCTURE
35-34	4.7	4.5	10.3	20.5	8.0	8.7
35-30	3.4	3.3	9.0	12.7	6.8	4.8
30-25	3.3	3.2	8.9	12.1	6.7	4.8
25-20	2.8	2.7	8.5	10.5	6.3	4.2
20-15	2.8	2.7	8.4	10.0	6.2	4.1
15-10-00	2.7	2.6	8.3	9.5	6.1	4.0
100	2.1	2.0	7.3	7.4	4.7	4.0

Table AP4.T6. 50 lbs TNT Medium Level of Protection

STANDOFF DISTANCE IN FEET	Percentage Building Cost Increase					
	BARRACKS EXTERNAL ENTRANCES	BARRACKS INTERIOR CORRIDOR	DINING FACILITY	ADMIN FACILITY	MEDICAL CLINIC	SPECIAL STRUCTURE
50-64	26.7	18.7	11.9	24.7	15.4	14.1
65-80	26.2	18.2	11.4	23.6	14.8	13.9
81-96	25.8	17.7	11.1	21.0	14.6	12.4
100-125	25.0	16.0	10.3	16.4	13.8	11.0
126-160	17.5	10.0	9.0	14.5	12.0	8.7
161-200	17.3	10.0	8.8	13.0	11.7	8.2
201-250	17.0	10.0	8.6	12.7	11.6	8.2
251-320	17.0	10.0	8.5	12.4	11.5	8.1
321-400	2.7	2.0	6.1	8.6	8.3	4.0
401-500	2.6	2.0	6.1	8.2	8.3	3.0
501+	2.1	2.0	4.7	7.0	7.3	3.0

Table AP4.T7. 50 lbs TNT High Level of Protection

STANDOFF DISTANCE IN FEET	Percentage Building Cost Increase					
	BARRACKS EXTERNAL ENTRANCES	BARRACKS INTERIOR CORRIDOR	DINING FACILITY	ADMIN FACILITY	MEDICAL CLINIC	SPECIAL STRUCTURE
30-34	28.7	8.7	14.1	27.7	17.3	20.4
35-39	28.4	8.5	13.8	27.2	17.0	19.2
40-44	27.3	7.9	12.8	25.2	16.1	18.7
45-49	26.7	6.7	12.1	22.3	15.7	14.7
50-54	26.5	6.4	11.9	22.0	15.5	13.8
55-59	26.2	6.2	11.4	21.8	14.8	13.3
60-69	18.8	6.6	10.2	20.3	13.2	11.2
70-74	17.4	4.9	8.9	15.7	11.9	8.9
75-79	17.3	4.4	8.8	15	11.7	8.3
80-84	17.2	4.0	8.7	12.7	11.7	6.2
85-89	2.8	2.7	6.2	10.0	8.4	6.1
90-94	2.6	2.5	6.1	8.7	8.3	3.9
100	2.1	2.0	4.7	7.6	7.3	3.8

Table AP4.T8. 220 lbs TNT Low Level of Protection

STANDARD DISTANCE IN FEET	Percentage Building Cost Increase					
	BARRACKS EXTERNAL ENTRANCES	BARRACKS INTERIOR CORRIDORS	DINING FACILITY	ADMIN FACILITY	MEDICAL CLINIC	SPECIAL STRUCTURE
10-44	7.6	7.2	11.1	27.4	13.1	15.1
44-48	7.3	7.1	10.8	26.6	12.8	14.8
48-49	6.8	6.6	10.3	25.7	12.4	14.4
49-50	6.5	6.3	9.8	25.4	11.8	14.0
50-51	4.6	4.8	8.1	14.3	9.9	8.9
51-53	4.0	3.9	7.5	13.6	9.5	8.5
53-54	3.6	3.5	7.1	12.4	9.2	8.2
54-70	3.6	3.5	7.0	12.0	9.1	8.1
70-74	3.2	3.1	6.7	11.5	8.8	7.8
74-88	3.2	3.1	6.6	11.0	8.8	7.8
88-100	3.1	3.0	6.5	10.7	8.7	7.4
100-124	3.1	3.0	6.5	10.6	8.6	7.4
124-150	2.8	2.7	6.3	10.3	8.5	7.2
150-200	2.8	2.7	6.2	10.0	8.4	7.1
200-300	2.6	2.5	6.1	9.2	8.3	6.6
300+	2.1	2.0	4.7	7.0	7.3	6.0

Table AP4.T9. 220 lbs TNT Medium Level of Protection

STANDOFF DISTANCE IN FEET	Percentage Building Cost Increase					
	BARRACKS EXTERNAL ENTRANCES	BARRACKS INTERIOR CORRIDOR	DINING FACILITY	ADMIN FACILITY	MEDICAL CLINIC	SPECIAL STRUCTURE
40-42	60.6	33.3	21.1	36.4	25.6	36.3
43-45	58.8	31.6	19.4	35.6	24.3	29.8
46-48	44.0	19.4	17.0	33.2	21.0	25.4
49-51	42.2	8.6	15.3	22.4	19.2	22.7
52-55	42.0	6.4	15.2	21.6	19.0	22.7
56-60	41.7	5.6	14.8	21.0	18.7	21.2
61-64	41.2	2.4	14.3	20.6	18.4	19.5
65-68	41.1	2.3	14.2	19.6	18.3	18.4
69-71	40.2	2.0	13.4	18.8	17.7	16.6
72-87	39.9	1.8	12.8	18.0	17.0	15.9
88-99	25.1	1.4	10.5	15.6	13.8	11.8
100-105	24.7	1.7	10.1	14.6	13.5	10.6
110-120	24.7	1.7	10.0	14.3	13.4	10.4
140-145	17.3	1.1	8.8	13.0	11.7	8.3
150-165	17.2	1.0	8.7	12.7	11.7	8.2
166-175	17.0	0.8	8.5	12.4	11.5	8.1
180-185	2.8	2.7	6.2	10.0	8.4	4.1
190-195	2.6	2.5	6.1	9.2	8.3	3.9
200	2.1	2.0	4.7	7.0	7.3	3.6

Table AP4.T10. 220 lbs TNT High Level of Protection

STANDOFF DISTANCE IN FEET	Percentage Building Cost Increase					
	BARRACKS EXTERNAL ENTRANCES	BARRACKS INTERIOR CORRIDOR	DINING FACILITY	ADMIN FACILITY	MEDICAL CLINIC	SPECIAL STRUCTURE
30	61.7	14.4	22.6	38.1	27.1	34.6
40-43	61.3	14.0	21.9	37.4	26.1	33.8
50-55	60.6	13.3	21.1	36.4	25.6	33.3
60-65	45.8	12.1	18.8	35.0	22.3	31.2
80-82	44.0	10.4	17.2	33.3	20.6	29.6
90-93	42.3	9.7	15.4	32.0	19.3	27.9
100-105	41.7	9.0	14.8	32.1	18.8	26.8
110-115	41.2	7.8	14.3	30.5	18.4	25.5
120-125	40.3	6.7	13.4	29.0	17.8	24.7
150-155	25.5	5.5	11.0	26.3	14.5	22.6
170-175	25.4	5.4	10.9	25.3	14.4	22.4
190-195	24.8	4.8	10.1	24.9	13.5	20.6
240-250	17.4	4.2	8.9	23.7	11.9	18.5
300-310	17.2	4.0	8.8	22.7	11.8	18.3
350-355	3.0	2.8	6.5	20.3	8.6	14.2
380-394	2.9	2.6	6.3	19.5	8.4	14.0
414-430	2.6	2.5	6.1	19.2	8.3	13.8
5000	2.1	2.3	4.7	17.6	7.3	12.9

Table AP4.T11. 500 lbs TNT Low Level of Protection

STANDOFF DISTANCE FEET	Percentage Building Cost Increase					
	BARRACKS EXTERNAL ENTRANCES	BARRACKS INTERIOR CORRIDOR	DINING FACILITY	ADMIN FACILITY	MEDICAL CLINIC	SPECIAL STRUCTURE
0-33	7.6	7.4	11.2	10.0	12.5	18.2
34-60	5.9	5.7	9.5	10.2	11.3	13.0
61-120	5.2	4.9	8.8	10.4	10.8	10.4
121-240	4.9	4.5	8.6	10.0	10.6	9.4
241-330	4.8	4.0	8.4	10.1	10.4	8.2
331-400	4.2	4.1	7.8	10.2	10.0	7.2
401-600	3.6	3.5	7.1	12.4	9.2	6.8
601-1100	3.6	3.0	7.0	12.4	9.1	5.7
1101-1500	3.2	2.7	6.6	11.0	8.8	4.6
1501-2400	3.1	2.0	6.6	11.0	8.8	4.4
2401-3300	3.1	2.0	6.5	10.8	8.6	4.3
3301-5000	3.0	2.0	6.4	10.5	8.6	4.2
5001-2700	2.8	2.0	6.2	10.0	8.4	4.1
2701-5000	2.6	2.0	6.1	9.2	8.3	3.8
5000+	2.1	2.0	4.7	7.0	7.3	3.9

Table AP4.T12. 500 lbs TNT Medium Level of Protection

STANDOFF DISTANCE IN FEET	Percentage Building Cost Increase					
	BARRACKS EXTERNAL ENTRANCES	BARRACKS INTERIOR CORRIDOR	DINING FACILITY	ADMIN FACILITY	MEDICAL CLINIC	SPECIAL STRUCTURE
50-83	81.6	5.5	23.7	32.4	29.1	41.8
84-99	80.9	13.2	23.0	31.3	28.6	38.9
100-114	66.1	12.0	20.6	25.3	25.3	34.7
115-134	64.4	10.9	18.9	20.9	24.1	29.0
135-159	56.9	9.8	17.6	24.1	22.3	25.7
160-181	56.2	8.8	16.9	22.8	21.8	24.5
182-209	55.9	8.8	16.6	22.4	21.5	23.6
210-234	55.8	8.6	16.5	22.1	21.5	23.5
235-269	41.0	7.4	14.2	18.6	18.3	18.3
270-319	40.2	6.0	13.3	18.4	17.7	16.5
320-359	40.2	5.5	13.3	18.1	17.6	16.4
360-444	39.9	6.2	12.8	17.7	17.0	16.9
445-499	39.5	5.9	12.4	17.3	16.7	14.7
500-599	39.5	5.8	12.4	16.9	16.7	14.8
600-699	24.6	4.6	10.0	14.0	13.4	10.4
700-799	24.7	4.4	9.7	13.5	13.1	10.7
800-854	24.2	4.2	9.6	12.5	13.0	10.0
855-999	16.8	3.7	8.4	11.8	11.4	7.9
1000-1199	2.6	2.8	6.1	6.2	8.3	3.9
1200	2.1	2.6	4.7	7.8	7.3	3.9

Table AP4.T13. 500 lbs TNT High Level of Protection

STAND OFF DISTANCE IN FEET	Percentage Building Cost Increase					
	BARRACKS EXTERNAL ENTRANCES	BARRACKS INTERIOR CORRIDOR	DINING FACILITY	ADMIN FACILITY	MEDICAL CLINIC	SPECIAL STRUCTURE
50-54	84.2	5.4	26.7	42.0	32.6	46.2
55-59	83.5	18.7	25.8	41.0	31.5	46.0
60-65	67.6	13.4	22.4	37.3	27.2	36.4
66-69	66.9	12.5	21.7	31.3	26.7	36.1
70-74	66.7	12.3	21.5	29.0	26.5	35.5
75-79	66.2	12.1	20.7	28.1	25.4	34.9
80-89	58.8	11.5	19.5	26.1	23.8	32.8
90-99	57.1	9.8	17.8	25.5	22.6	27.0
100-109	42.1	8.4	15.2	21.0	19.1	22.0
110-119	41.5	7.0	14.6	20.7	18.7	20.5
120-129	41.2	7.6	14.3	20.4	18.4	19.8
130-139	40.3	6.7	13.4	19.0	17.8	16.7
140-174	40.2	6.0	13.3	18.4	17.7	16.0
175-189	39.9	6.2	13.0	17.8	17.4	15.0
190-209	39.6	5.0	12.5	17.4	16.8	14.0
210-224	24.8	4.6	10.1	14.0	13.5	10.0
225-229	24.7	4.7	10.0	14.5	13.4	10.4
230-239	24.6	4.6	10.0	14.0	13.4	10.4
240-244	24.5	4.5	9.8	13.2	13.2	10.1
245-254	24.2	4.2	9.6	12.0	13.0	10.0
255-269	16.8	2.0	8.4	11.0	11.4	7.8
270-279	2.6	2.5	6.1	9.2	8.3	5.0
280	2.1	2.0	4.7	7.0	7.3	3.0

Table AP4.T14. 1000 lbs TNT Low Level of Protection

STANDOFF DISTANCE IN FEET	Percentage Building Cost Increase					
	BARRACKS EXTERNAL ENTRANCES	BARRACKS INTERIOR CORRIDOR	DINING FACILITY	ADMIN FACILITY	MEDICAL CLINIC	SPECIAL STRUCTURE
50-54	8.4	8.7	12.1	20.1	13.1	20.8
55-59	8.3	8.6	11.9	19.9	13.0	20.6
60-65	7.6	7.9	11.2	19.3	12.5	19.2
66-69	5.8	6.2	9.4	16.3	11.2	12.4
70-73	5.7	6.1	9.3	15.4	11.1	12.3
74-79	5.1	5.5	8.7	14.5	10.6	10.7
80-84	4.8	5.2	8.4	13.1	10.4	9.2
85-89	4.7	5.1	8.4	13.7	10.4	9.1
90-94	4.1	4.5	7.8	12.8	9.9	7.1
95-99	3.8	4.2	7.5	12.2	9.7	6.2
100-104	3.5	4.0	7.0	11.8	9.1	5.7
105-109	3.5	3.9	7.0	11.5	9.0	5.6
110-114	3.1	3.5	6.6	11.0	8.8	4.4
115-119	3.1	3.5	6.5	10.7	8.7	4.3
120-124	3.0	3.3	6.4	10.3	8.6	4.2
125-129	2.8	3.2	6.2	10.0	8.4	4.1
130-134	2.6	3.0	6.1	9.2	8.3	3.8
140	2.1	2.0	4.7	7.0	7.3	3.6

Table AP4.T15. 1000 lbs TNT Medium Level of Protection

STAND-OFF DISTANCE IN FEET	Percentage Building Cost Increase					
	BARRACKS EXTERNAL ENTRANCES	BARRACKS INTERIOR CORRIDOR	DINING FACILITY	ADMIN FACILITY	MEDICAL CLINIC	SPECIAL STRUCTURE
50-54	82.9	15.1	25.5	34.2	31.3	44.3
55-59	82.6	14.8	25.2	33.7	31.0	43.2
60-64	82.2	14.4	24.6	33.2	30.2	42.5
70-74	81.7	14.0	23.8	32.5	29.1	41.7
75-79	66.1	12.0	20.6	28.8	25.3	34.7
80-84	58.7	11.1	19.5	27.6	23.7	32.7
85-89	57.0	9.7	17.7	26.0	22.5	29.6
90-94	56.9	9.6	17.6	25.1	22.3	29.7
100-104	56.8	9.5	17.5	23.7	22.2	29.5
110-114	56.1	8.9	16.8	22.8	21.7	24.3
115-119	41.3	7.7	14.5	20.1	18.5	20.9
120-124	41.1	7.4	14.2	19.5	18.3	19.3
130-134	40.4	6.8	13.5	18.7	17.8	17.5
140-144	40.2	6.5	13.3	18.1	17.6	16.4
155-159	40.1	6.5	13.2	17.8	17.6	16.3
200-204	39.8	6.2	12.7	17.4	16.9	15.9
210-214	39.5	5.8	12.4	16.8	16.7	14.5
220-224	24.7	4.7	10.0	14.5	13.4	10.4
230-249	24.6	4.8	10.0	14.0	13.4	10.4
250-300	24.5	4.5	9.8	13.1	13.2	10.1
400-437	24.2	4.2	9.6	12.5	13.0	10.0
440-462	16.8	3.7	8.4	11.5	11.4	7.6
500-500	2.6	2.6	6.1	9.2	8.3	3.0
740	2.1	2.0	4.7	7.0	7.3	3.8

Table AP4.T16. 1000 lbs TNT High Level of Protection

STANDOFF DISTANCE IN FEET	Percentage Building Cost Increase					
	BARRACKS EXTERNAL ENTRANCES	BARRACKS INTERIOR CORRIDOR	DINING FACILITY	ADMIN FACILITY	MEDICAL CLINIC	SPECIAL STRUCTURE
00-02	84.9	17.1	27.5	45.3	33.5	47.4
03-04	84.7	16.9	27.2	45.0	33.1	47.0
05-06	84.5	16.7	27.0	44.6	32.9	46.6
07-08	83.9	16.3	26.4	43.5	32.4	46.2
09-10	68.1	13.0	23.1	33.0	28.1	39.5
10-14	67.4	13.2	22.2	31.0	27.0	38.1
15-19	59.3	12.0	20.3	28.7	24.8	33.7
20-24	57.6	10.3	18.6	26.2	23.6	27.6
25-29	57.1	9.5	17.8	25.5	22.6	27.0
30-34	56.9	8.6	17.6	24.1	22.3	25.7
35-39	42.1	6.4	15.2	21.6	19.1	22.9
40-44	42.1	7.0	15.2	20.7	19.1	20.6
45-49	41.1	7.4	14.2	19.6	18.3	18.9
50-54	40.2	6.6	13.3	18.4	17.7	16.6
55-59	25.4	5.4	10.9	15.9	14.4	12.3
60-64	25.1	6.1	10.6	15.2	14.2	11.1
65-69	24.9	4.9	10.4	14.4	14.0	10.9
70-74	24.6	4.0	10.0	14.0	13.4	10.4
75-79	24.5	4.5	9.8	13.2	13.2	10.1
80-84	17.1	3.9	8.6	11.9	11.6	8.1
85-89	16.9	3.7	8.4	11.6	11.5	8.0
90+	2.1	2.0	4.7	7.9	7.3	3.9

Table AP4.T17. 20,000 lbs TNT Low Level of Protection

STAND OFF DISTANCE IN FEET	Percentage Building Cost Increase					
	BARRACKS EXTERNAL ENTRANCES	BARRACKS INTERIOR CORRIDOR	DINING FACILITY	ADMIN FACILITY	MEDICAL CLINIC	SPECIAL STRUCTURE
175-200	9.8	9.6	14.0	23.6	15.5	27.2
181-190	9.5	9.3	13.7	23.1	15.3	26.2
191-204	9.4	9.2	13.6	22.9	15.2	25.7
205-220	9.2	9.0	13.4	21.6	15.0	25.4
221-230	8.4	8.2	12.0	20.5	13.1	23.8
241-242	8.3	8.1	11.9	19.9	13.0	23.7
243-250	7.6	7.4	11.2	18.8	12.5	20.8
251-270	7.2	7.0	10.7	18.4	11.8	20.2
281-282	7.1	6.9	10.6	17.8	11.6	20.0
283-310	5.4	5.3	8.9	15.6	10.4	13.1
311-315	4.8	4.7	8.2	14.1	10.0	10.7
320-373	4.7	4.6	8.2	13.7	9.9	10.0
374-375	4.4	4.3	7.9	13.3	9.7	9.4
380-410	4.4	4.2	7.8	12.9	9.6	8.3
411-485	3.8	3.6	7.2	12.3	9.2	6.9
486-500	3.5	3.4	6.9	11.8	9.0	5.7
501-525	3.4	3.3	6.9	11.2	8.9	5.7
526-700	3.1	3.0	6.5	10.8	8.6	4.9
701-797	3.0	2.9	6.4	10.3	8.6	4.2
800-1050	2.8	2.7	6.2	10.0	8.4	4.1
1051-2000	2.6	2.5	6.1	9.2	8.3	3.9
2001-	2.1	2.0	4.7	7.0	7.3	3.9

Table AP4.T18. 20,000 lbs TNT Medium Level of Protection

STAND OFF DISTANCE IN FEET	Percentage Building Cost Increase					
	BARRACKS EXTERNAL ENTRANCES	BARRACKS INTERIOR CORRIDOR	DINING FACILITY	ADMIN FACILITY	MEDICAL CLINIC	SPECIAL STRUCTURE
100-180	85.7	77.9	29.1	39.4	35.3	55.5
180-190	84.4	76.5	27.8	37.7	34.3	53.5
200-284	69.6	75.4	25.4	35.2	31.1	48.3
285-315	69.4	75.0	25.2	34.9	30.9	46.6
315-330	67.9	74.6	22.9	34.7	27.9	42.4
330-350	67.7	73.9	22.7	34.4	27.7	41.2
350-375	60.3	72.9	21.5	29.9	26.1	39.7
375-390	59.4	72.0	20.2	28.5	24.2	38.7
390-400	59.3	71.6	20.0	27.8	24.1	37.9
400-501	58.6	71.3	19.3	26.7	23.6	35.7
502-550	58.3	71.3	18.8	25.2	22.8	34.8
550-630	58.2	71.0	18.7	25.0	22.7	34.5
630-740	56.5	69.7	17.0	23.5	21.5	27.4
740-770	41.7	67.1	14.6	20.8	18.3	24.3
770-820	41.1	65.5	14.0	19.9	17.9	23.6
820-844	41.1	64.9	14.0	19.7	17.8	23.0
845-904	40.7	64.1	13.6	19.2	17.5	19.6
905-960	40.1	63.5	13.0	18.4	17.1	17.7
970-974	40.0	63.4	12.9	17.7	17.0	17.0
975-974	39.8	62.2	12.7	17.5	16.8	16.9
975-768	25.0	60.0	10.3	14.6	13.6	11.3
767-790	24.7	59.7	10.0	14.0	13.4	10.4
800-1030	24.6	59.5	9.9	14.0	13.3	10.3
1030-1050	24.5	59.5	9.8	13.9	13.2	10.2
1100-1237	17.1	55.9	8.6	11.8	11.5	9.0
1238-2000	16.8	55.7	8.4	11.6	11.4	7.0
2000-	2.1	50.0	4.7	7.0	7.3	3.0

Table AP4.T19. 20,000 lbs TNT High Level of Protection

STANDOFF DISTANCE IN FEET	Percentage Building Cost Increase					
	BARRACKS EXTERNAL ENTRANCES	BARRACKS INTERIOR CORRIDOR	DINING FACILITY	ADMIN FACILITY	MEDICAL CLINIC	SPECIAL STRUCTURE
277-353	69.6	18.4	25.4	35.2	31.1	46.3
353-754	69.3	18.0	25.1	34.8	30.9	45.8
754-1001	69.1	17.8	24.9	34.4	30.6	44.7
1001-1417	60.4	14.1	21.6	30.3	26.2	39.0
1417-2222	59.5	13.9	20.2	28.1	24.3	36.3
2222-3287	58.8	13.4	19.5	26.1	23.8	35.4
3287-4349	58.5	13.4	19.0	27.6	23.0	34.8
4349-5594	43.7	11.7	16.6	26.1	19.8	30.6
5594-7007	43.5	10.9	16.4	23.7	19.6	30.3
7007-8770	41.8	8.4	14.7	21.2	18.3	28.4
8770-1000	41.1	7.5	14.0	20.2	17.9	28.0
1000-1324	41.1	7.9	14.0	19.6	17.8	28.1
1324-1604	40.7	7.1	13.6	18.2	17.5	19.6
1604-1774	40.1	6.5	13.0	18.3	17.1	17.1
1774-2773	25.4	5.4	10.7	15.8	13.9	13.0
2773-3336	25.1	5.1	10.4	15.4	13.7	12.0
3336-3934	25.0	4.9	10.3	14.5	13.6	11.7
3934-10000	24.6	4.8	9.9	14.0	13.3	10.3
1100-11150	17.2	4.0	8.7	12.7	11.7	8.2
11150-13116	17.1	3.8	8.6	11.9	11.5	8.0
13116-20000	16.8	3.7	8.4	11.0	11.4	7.9
20000	2.1	2.0	4.7	7.0	7.3	5.9

Table AP4.T20. Ballistic Threat Low and High Levels of Protection

Structure Type	Percentage Building Cost Increases				
	Low Level of Protection	High Level of Protection			
		Low Threat Severity	Medium Threat Severity	High Threat Severity	Very High Threat Severity
DMRG FACILITY	0.18	2.6	3.9	5.1	6.1
Administration Bldg	0.81	17.5	25.3	27.6	30.4
Medical Clinic	0.12	3.1	4.4	5.6	6.5
Barracks Exterior Entrance	0.13	6.4	8.1	16.0	17.0
Barracks Corridor Entrance	0.13	3.1	4.5	5.2	5.7
Special Structures	0.18	4.2	5.0	9.7	11.9

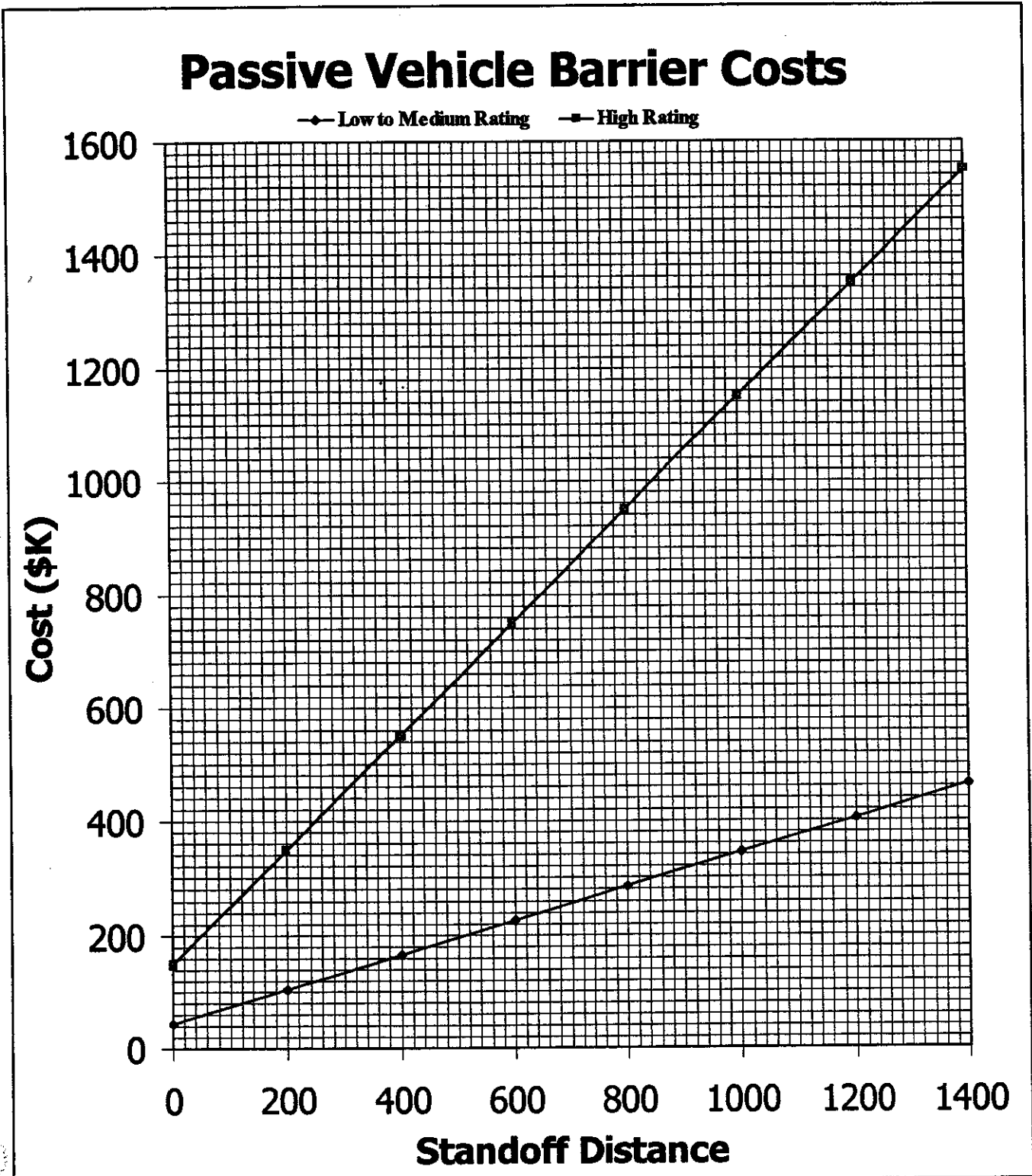
Table AP4.T21. Passive Vehicle Barrier Costs and Ratings

Rating	Cost Per Foot	Vehicle Weight (in lbs)	Vehicle Speed MPH
High	\$100	60,000	Up to 25
High	\$100	15,000	30-50
Low to Medium	\$30	15,000	Up to 30
Low to Medium	\$30	4,000	Up to 55
Non-rated force	\$23	Not Applicable	Not Applicable

Table AP4.T22. Active Vehicle Barrier Costs per Vehicle Entrance/Exit

Rating	Cost Per Vehicle Lane	Vehicle Weight (in lbs)	Vehicle Speed MPH
High	\$42,000	60,000	Up to 25
High	\$42,000	15,000	30-50
Low to Medium	\$25,000	15,000	Up to 30
Low to Medium	\$25,000	4,000	Up to 55
Non-rated active control gate	\$2,000	Not Applicable	Not Applicable

Figure AP4.F1. Total Cost for Passive Vehicle Barrier Systems Versus Standoff Distance



APPENDIX J

ARMY REGULATION 190-11

APPENDIX J

ARMY REGULATION 190-11

Military Police

Physical Security of Arms, Ammunition, and Explosives

**Headquarters
Department of the Army
Washington, DC
12 February 1998**

Unclassified

SUMMARY of CHANGE

AR 190-11

Physical Security of Arms, Ammunition, and Explosives

This revision-

- o Requires review of DA Form 4604-R, Security Construction Statement, during physical security surveys and inspections and revalidation by engineer personnel every 5 years (para 2-2d).
- o Requires close monitoring by all officers, noncommissioned officers, or civilian equivalents of control of ammunition and explosives during field training or range firing to eliminate most security problems (para 2-5f).
- o Requires installation commanders providing logistical support to provide a copy of an unsatisfactory physical security survey or inspection concerning Reserve component and Reserve Officer Training Corps (ROTC) units, to include written comments to show which elements have received copies (para 2-6a(4)).
- o Does not allow ROTC/Junior ROTC units, gun clubs, and activities under the responsibility of the Director of Civilian Marksmanship Program to possess or store Category I or Category II arms, ammunition, or explosives (AA&E) (para 2-7).
- o Abolishes the requirement to provide copies of the results of AR 15-6 investigations to the Commander, U.S. Army Military Police Operations Agency (para 2-9c).
- o Abolishes the requirement for appointment of and instructions for boards of officers and investigating officers (para 2-9c).
- o Identifies additional personnel selection requirements for transporting Categories I, II, or classified AA&E (para 2-11).
- o Adds a new DA Form 7281-R (Command Oriented Arms, Ammunition, and Explosives (AA&E) Security Screening and Evaluation Record) to aid in the screening process of AA&E assignments (para 2-11).
- o Abolishes exemption for officer personnel from command developed security screening procedures before access to Categories I and II is authorized (para 2-11b).
- o Requires formal agreements concerning physical security requirements for AA&E to be implemented by an appendix to a host tenant activity support agreement or by a letter of instruction (para 3-2c).

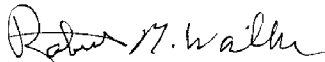
- o Requires AA&E storage facilities that require intrusion detection systems (IDS) to be protected by at least two types of sensors, one of which must be a volumetric sensor (para 3-6a).
- o Requires civilian contractor employees involved in the design, operation, and maintenance of IDS for AA&E facilities to possess a minimum security clearance of confidential (para 3-6h).
- o Allows local for the use of electronic generation DA Form 5513-R (para 3-8a).
- o Requires the recording of combinations to locks on vault doors or GSA-approved Class 5 or 6 security containers storing AA&E using the SF 700 (Security Container Information) (para 3-8b).
- o Revises table 4-1 (para 4-2f).
- o Incorporates the security requirements for AA&E at Army museums from AR 190-18, section III (para 4-13).
- o Requires armed guards to be posted on Categories I and II AA&E facilities upon failure of IDS (para 5-2a(3)(a)).
- o Requires Categories III and IV bulk AA&E storage areas protected by IDS to be checked by a security patrol at irregular intervals not to exceed 48 hours (para 5-2b(2)).
- o Requires primary and backup communications at guard posts located at bulk AA&E storage facilities to be tested daily by supervisor personnel (para 5-7).
- o Gives King Tut blocks equal priority for the protection of Categories I through IV AA&E (para 5-13).
- o Requires weapons to be registered in the DOD Central Registry prior to shipment of abandoned and confiscated privately-owned firearms to Anniston Army Depot (para 6-7a).
- o Adds/revises security guidance on: vessel movements of U.S.-owned AA&E to and from overseas and intra-theater movements (para 7-6c); small quantity shipments and organic and unit movements (para 7-9); foreign military sales movements (para 7-12); contract movements (7-13); commercial shipments at DOD installations and activities (para 7-14); and transportation of marksmanship weapons and ammunition (para 7-18).
- o Prohibits personnel from carrying, moving, or storing Government AA&E in privately-owned vehicles either on or off installations (para 7-15).
- o Table 7-1 has been redesignated as paragraph 7-19.

- o Lifts the restriction on the use of containers on a flatcar shipment of Categories I and II AA&E, and revises security standards for AA&E shipment (para 7-19).
- o Requires overseas installation commanders to send completed DA Forms 3056 to Director, Crime Records Center (CRC). Director, CRC, will be required to make lost, stolen, or recovered weapon entries into the NCIC from overseas commands (para 8-3c).
- o Requires lost, stolen, or recovered weapons to be promptly entered in the DOD Central Registry (para 8-3f).
- o Clarifies that blank ammunition, .22 caliber rimfire ammunition, and inert training ammunition is excluded from the requirements of this regulation (para B-1).
- o Adds the AT-4 antitank weapon to Category I (missiles and rockets) AA&E (para B-2a(1)).
- o Identifies the M16A2 rifle and the squad automatic weapon (SAW) as Category II arms (para B-2b(1)).
- o Adds critical binary munitions components containing 'DF' and 'QL' as Category II ammunition and explosives (para B-2c(2)(d)).
- o Revises physical security standards for commercial terminals (app C).
- o Revises and renames appendix E to losses/overages list for AR 15-6 investigations (app E).
- o Abolishes the semiannual reporting requirement (RCS CSPA-1645) Physical Security of Sensitive Conventional AA&E (app G).
- o Moves AA&E facility criteria from chapter 4 to appendix G (para G-1).
- o Adds extracted information from DOD 5100.76-M in-- a. New appendix H (replaces DODI 5220.30) and prescribes standards for safeguarding certain categories of sensitive AA&E in the custody of or being manufactured by DOD prime contractors and subcontractors. b. New appendix I, Enhanced Transportation Security Measures During Terrorist Threat Conditions.
- o Authorizes exact replication of any DA or DD Forms prescribed in this regulation that are generated by the automated Military Police Management Information System in place of the official printed version of the form (app A, sec III).

Effective 12 March 1998

Military Police

Physical Security of Arms, Ammunition, and Explosives



Robert M. Walker
Acting Secretary of the Army

History. This publication was originally printed on 30 September 1993. This printing publishes Change 1.

Summary. Changes have been made throughout this regulation. Major changes include revision of policy governing security of Category I missiles; the frequency of security checks for all categories of AA&E; the addition of an appendix that contains guidesheets for operational checks of a intrusion detection system; the addition of an appendix that contains a guidesheet for AA&E; and the inclusion of the Army National Guard of the

United States under the applicability of this regulation.

Applicability. This regulation applies to the Active Army, United States Army Reserve, Army National Guard of the United States, and contractor-owned, contractor-operated facilities. This regulation is mandatory for use by all major Army commands and for incorporation into those Department of Defense contracts where it is relevant. Appendix H is effective immediately for all new acquisitions. This regulation does not apply to privately-owned weapons in household goods shipments. This publication applies during partial and full mobilization.

Proponent and exception authority.

The proponent of this regulation is the Deputy Chief of Staff for Operations and Plans. The Deputy Chief of Staff for Operations and Plans has the authority to approve exceptions to this regulation that are consistent with controlling law and regulation. The Deputy Chief of Staff for Operations and Plans may delegate this authority in writing to a division chief within the proponent agency in the grade of colonel or the civilian equivalent.

Army management control process.

This regulation is subject to the requirements of AR 11-2. It contains internal control provisions but does not contain checklists for

conducting internal control reviews. These checklists are contained in DA Circular 11-89-2.

Supplementation. Supplementation of this regulation is prohibited without prior approval of HQDA (DAMO-ODL), 400 ARMY PENTAGON, WASH DC 20310-0400.

Interim changes. Interim changes to this regulation are not official unless they are authenticated by the Administrative Assistant to the Secretary of the Army. Users will destroy interim changes on their expiration dates unless sooner superseded or rescinded.

Suggested Improvements. Users are invited to send comments and suggested improvements, through established command channels, on DA Form 2028 (Recommended Changes to Publications and Blank Forms) to HQDA (DAMO-ODL), 400 ARMY PENTAGON, WASH DC 20310-0400.

Distribution. Distribution of this publication is made in accordance with the initial distribution number (IDN) 092568, intended A, B, C, D and E for Active Army, Army National Guard, and U.S. Army Reserve.

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*This regulation supersedes AR 190-11, 31 March 1986; and paragraphs 3, 4, 5, 10, 12, 14, 18, 20 through 26, and appendix B of AR 190-18, 1 April 1984.

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Chapter 1 General Information

Section I Introduction

1-1. Purpose

a. This regulation prescribes standards and criteria for the physical security of sensitive conventional arms, ammunition, and explosives (AA&E), including nonnuclear missiles and rockets, as set forth in appendix B, in the custody of any Department of the Army (DA) Component, or contractor and subcontractor. (See app H for AA&E physical security standards at contractor facilities.) This regulation also prescribes policy, procedures, and standards, and assigns responsibilities for the effective implementation and application of physical security of AA&E.

b. Although the standards and criteria in this regulation will provide adequate protection against loss or theft of AA&E at most DA activities, and Department of Defense (DOD) (DA) contractor activities, the threat or characteristics of a particular location may require increased measures subject to approval by the major Army commands (MACOMs) concerned. MACOMs will establish procedures to review the justification of military construction projects that exceed the criteria in this regulation. This regulation does not authorize methods or operations inconsistent with AR 385-64, paragraphs 1 through 12 and appendix A.

c. The provisions of this regulation apply to sensitive conventional arms, ammunition and explosives as follows:

(1) *Arms.* Weapons that will, or are designed to, expel a projectile or flame by the action of an explosive and the frame or receiver of such weapons and comparable foreign arms, U.S. prototype arms and illegally manufactured arms which are retained in the inventory for training, familiarization, and evaluation. This includes handguns, shoulder-fired weapons, light automatic weapons up to and including .50 caliber machine-guns, multibarrel machine-guns such as the 7.62mm M134, recoilless rifles up to and including 106mm, mortars up to and including 81mm, man-portable rocket launchers, flame-throwers, and individually operated weapons that are portable or can be fired without special mounts or firing devices and that have potential use in civil disturbances and are vulnerable to theft. Comparable foreign arms, U.S. prototype arms, and illegally manufactured weapons retained in the inventory for training, familiarization, and evaluation are also included.

(2) *Ammunition.* A device charged with explosives, propellants, pyrotechnics, initiating composition, riot control agents, chemical herbicides, smoke and flame for use in connection with defense or offense including demolition and having, in general, an individual or unit of issue, container, or package weight of 100 pounds or less. Included are rounds of 40mm and larger; conventional, guided missile, and rocket ammunition weighing 100 pounds or less per round; and 1,000 or more rounds of ammunition smaller than 40mm; and, other ammunition specified in appendix B. Ammunition excluded from the specified requirements of this regulation are the following:

- (a) Devices charged with nuclear or biological agents;
- (b) Devices charged with chemical agents, except for those specified in appendix B;
- (c) Blank ammunition, .22 caliber rimfire ammunition, inert training ammunition;
- (d) Artillery, tank, mortar ammunition 90mm and large, and naval gun ammunition 3 inches, 76mm, and larger. However, this ammunition requires Transportation Protective Service as set forth in chapter 7.
- (3) *Explosives.* Any chemical compound, mixture, or device, the primary purpose of which is to function by explosion. The term includes, but is not limited to, individual land mines, demolition charges, blocks of explosives and other explosives consisting of 10 pounds or more. The scope of this regulation additionally includes and is limited to:
 - (a) Categorized explosives specified in appendix B.

(b) Uncategorized Class A and B explosives when being transported (see chap 7).

d. AA&E items covered by this regulation that are also classified will be stored and transported per AR 380-5, appendix H, AR 55-355, chapter 34, and this regulation. Where specific individual requirements differ between these regulations, the more stringent requirement will be followed.

e. MACOMs will prescribe physical security requirements for AA&E items outside the scope of this regulation. Consistent with operational and safety requirements and this regulation, physical security requirements for production and manufacturing operations at Government facilities will be prescribed by the Joint Ordnance Commanders' Group (JOCG).

f. The criteria in this regulation are intended for sites where AA&E are maintained on a permanent basis during daily peacetime conditions, and not for training, contingency sites or operations, such as wartime, force generations, exercises, or operational readiness inspections. For sites and operations not specifically covered in this regulation, MACOMs will establish requirements and procedures to provide protection for AA&E consistent with the philosophy of this regulation, when operationally and environmentally feasible. Upon declaration of war, commanders may prescribe procedures suspending specific physical security provisions of this regulation to account for local conditions, while ensuring maximum practical security for Government personnel and property. This authority is granted to installation, division, and separate brigade commanders and may be delegated to commanders in the grade of lieutenant colonel. Upon mobilization (prior to a declaration of war), this authority is granted to commander of MACOMs and may not be further delegated. In the above circumstances (declaration of war or mobilization), suspension of transportation physical security requirements will be coordinated promptly with HQDA (DAMO-ODL and DALO-TSP) and with the Commander (CDR), Military Traffic Management Command (MTMC).

g. The Army's inventory of AA&E is a vital part of its readiness posture. Loss or theft of such material can foster fear in the public sector and create an image of the Army's inability to secure its assets. The degree of security to provide AA&E is contingent upon many variables. It is impractical, therefore, to prescribe definitive DA physical security standards to cover all anticipated conditions that could impose a threat to the security of the items to be protected. Minimum physical security standards are prescribed in this regulation. As the criminal or other type threats to these materials increase at the local level, security measures at that level may need to be more stringent than those prescribed in this regulation. Commander will notify Headquarters, Department of the Army (HQDA) immediately through commander channels local resources are inadequate to provide necessary protection.

1-2. References

Required and related publications and prescribed and related forms are listed in appendix A.

1-3. Explanation of abbreviations and terms

Abbreviations and special terms used in this regulation are explained in the consolidated glossary.

Section II Responsibilities

1-4. The Deputy Chief of Staff for Operations and Plans
The Deputy Chief of Staff for Operations and Plans (DCSOPS) will develop policies, standards, and procedures on the physical security of sensitive conventional AA&E.

1-5. HQDA staff agencies, MACOMs, Army National Guard of the United States, and installation commanders
Heads of HQDA staff agencies, MACOMs, Army National Guard of the United States, and installation commanders will support the AA&E physical security program according to prescribed responsibilities in AR 190-13, paragraph 1-5 and this regulation.

a. All commanders will apply enough human resources and funds to AA&E physical security programs at all levels.

b. MACOM commanders will identify resource needs in the planning, programming and budgeting system, and allocate necessary resources to support their AA&E physical security program. Installation commanders will ensure funds identified for physical security are used as intended.

1-6. Rescinded

1-7. The Chief of Engineers

The Chief of Engineers (COE) will ensure that construction plans for new or modified AA&E storage facilities meet the minimum standards prescribed by this regulation.

1-8. The Commanding General, U.S. Army Materiel Command

The Commanding General, U.S. Army Materiel Command (CG, AMC) will prescribe policies, procedures, and standards to physically secure AA&E manufacturing and production facilities and those AA&E under research, development or being tested and evaluated under DA jurisdiction. Implementing instructions issued by CG, AMC will be according to the philosophy and policies in this regulation. AMC, through tri-Service coordination, will use the Decision Logic Tables (see para B-3) and will determine the appropriate risk categories for AA&E items. Security requirements for conventional ammunition and explosives during production and manufacturing operations at Government-owned, contractor-operated (GOCO) facilities are prescribed by the JOCG (DOD 5160.65-M, chap 12). Security requirements for AA&E in the custody of or being manufactured at contractor-owned, contractor-operated (COCO) facilities are established in appendix H.

1-9. Commanding General, U.S. Army Criminal Investigation Command

The CG, U.S. Army Criminal Investigation Command (USACIDC) will—

a. Conduct preliminary investigation into losses of all Category I and II AA&E items, regardless of dollar value, to determine if a crime was committed.

b. Conduct preliminary investigation into losses of Category III and IV items meeting the quantities listed in appendix E, regardless of dollar value, to determine if a crime was committed.

c. Conduct investigations of actual or attempted break-ins or armed robberies of AA&E storage facilities.

d. Provide copies of USACIDC Serious/Sensitive Incident (SSI) reports which may be prepared pertaining to a, b, and c above to HQDA (DAMO-ODL-S), 400 ARMY PENTAGON, WASH DC 20310-0400.

e. If a crime was committed, conduct a complete investigation and provide HQDA (DAMO-ODL-S), upon request, copies of such investigation reports.

f. If needed, coordinate with the proper law enforcement activity (LEA), provost marshal office (PMO), or security office, to ensure assignment of a physical security specialist to the investigation.

g. Using the results of completed investigations, assist HQDA (DAMO-ODL) and the commander concerned in evaluating existing security measures and recommending corrective action to improve security of such items.

1-10. Commanders and custodians of AA&E

Commanders and custodians of AA&E will—

a. Comply with this regulation.

b. Ensure necessary measures are taken to safeguard AA&E at all times. This includes providing specific instructions on individual responsibility for AA&E during operational or field training conditions, care and maintenance, competitive marksmanship meet, and storage on, or when mounted on, vehicles and aircraft.

c. Ensure timely submission of serious incident reports (SIR) per AR 190-40, paragraph 4-9.

d. Report all losses (actual or suspected) or recoveries within 2 hours of initial detection to the proper law enforcement agencies.

e. Conduct prompt investigation of losses after a decision of the USACIDC that criminal acts were not involved.

f. Fix responsibility when negligence is determined and take proper corrective action to prevent further loss.

g. Publicize AA&E security and loss prevention through command information and unit training programs.

h. Plan, program, budget, and allocate resources for the implementation of required policies outlined in this regulation.

i. Ensure that AA&E storage facilities are checked, inventoried, and inspected as required by this regulation.

1-11. Active Army installation commanders, Reserve Component commanders, and unit commanders

Active Army installation commanders, Reserve Component (RC) commanders, and ROTC unit commanders will—

a. Coordinate physical security plans with local LEAs and supporting military intelligence (MI) and USACIDC elements.

b. Set up liaison at the local level with the agencies per chapter 3.

c. Ensure that agreements governing consolidated AA&E storage facilities and the storage of AA&E property of Federal, State, contractor agencies, and foreign government agencies contain definite assignment in writing of responsibility for the items stored.

d. Conduct unannounced inspections as often as deemed necessary by the commander concerned.

e. Ensure construction programming documents involving AA&E facilities have been coordinated with the responsible provost marshal or security officer.

1-12. Commanders or directors of activities, installation planning boards, and responsible or accountable officers

a. Commanders or directors of activities, and units on Active Army installations, or subinstallations, will coordinate physical security plans for standard operating procedures (SOPs) once a year with the installation PMO or Security Office. They will—

(1) Ensure their security procedures are current and in keeping with the command and HQDA physical security directives.

(2) Include provisions in security procedures for applying physical security measures for storage areas in keeping with the host commanders assessment.

b. Commanders or directors of tenant activities (located both on and off the installation) must identify their security requirements to the host installation. They will ensure funding provisions are considered in proper budget programs.

c. Installation planning boards will include a physical security representative from the LEA, PMO or Security Office as a voting member on all actions. The representatives will ensure that provisions of this regulation are considered and made a matter of record during the planning process.

d. This regulation does not relieve responsible or accountable officers of this responsibility to account for property.

e. Persons issued or holding AA&E are responsible for properly securing such property while it is charged or entrusted to their care.

1-13. Security of nonsensitive AA&E

AA&E that does not meet the criteria in this regulation for “sensitive” items must be safeguarded from pilferage, theft, and wrongful destruction when stored or deployed in the field. Although this regulation does not prescribe security criteria for these items, AR 190-13, paragraph 1-5, assigns commanders the responsibility to ensure reasonable security measures are taken to safeguard property and facilities that may be vulnerable to criminal acts or other disruptive activities. Commanders and security personnel involvement is necessary to ensure that the security measures taken provide enough security based on an assessment of the threat and vulnerability of the items concerned. Such security measures can include use of fences, lighting, locks and key control, security patrols, and any

other measures deemed suitable by the commander responsible for the security of the items involved.

1-14. Transportation security

Responsibilities pertaining to transportation security standards and procedures are discussed in paragraph 7-2 for: the Commander, Military Traffic Management Command (MTMC), (para 7-2*a* and *b*), overseas theater commanders (para 7-2*a*), the Military Airlift Command (MAC) (para 7-2*c*), and the Military Sealift Command (MSC) (para 7-2*d*).

Chapter 2 Policy

2-1. General

a. Systems should incorporate technology and equipment available within the Federal Government and the private sector to provide cost effective protection, automated accountability, and inventory control. Physical security equipment management policy is established in AR 190-13, chapter 4. Security criteria will be included in initial plans for research and development, as well as all new or modified construction projects.

b. To minimize the cost of physical security and inventory control, and to reduce theft vulnerability, the quantities of AA&E and the number of storage facilities for AA&E should be reduced. Storage should be consolidated to the maximum extent consistent with operational, safety, and training requirements.

(1) AA&E should be removed from designated storage areas as briefly as possible. The quantity to be removed should be as small as possible to support specific missions or projects. Storage areas should be as small as possible consistent with safety standards, security, and mission requirements.

(2) Further reduction of costs for protection and inventory control can be effected by grouping the consolidation of AA&E into smaller storage areas by assigned risk category, and providing the degree of physical security protection needed for that category. Priority attention will be given to demilitarization or disposal of obsolete and unserviceable AA&E to avoid unnecessary storage, security, and inventory-related costs.

(3) The provisions of this regulation are intended to provide adequate storage security for AA&E at most DA activities. There may be a few unusual activities, such as large depots or remote storage areas without existing electrical service, where not all criteria in this regulation can be directly applied in a cost effective manner. At these unusual or unique facilities, local conditions must be carefully evaluated, and the security system must be tailored to the local conditions, based on practicability and cost, rather than specific security requirements prescribed herein. In these instances, waivers or exceptions should conform to the requirements provided in paragraph 2-4.

2-2. Construction of facilities

a. The provisions of this regulation are mandatory for new construction of permanent land-based installations for storage of sensitive AA&E. Modification to existing facilities will be accomplished in accordance with the criteria set forth in this regulation.

b. The tearing down and rebuilding of facilities will not be undertaken unless the concerned MACOM has determined that existing security measures cannot be supplemented to provide the required degree of protection. When nonstandard structures or facilities provide equivalent or better protection, modifications will not be undertaken. Exceptions to this policy will be granted under paragraph 2-4.

c. Upgrading of existing storage structures must be consistent with approved plans for future development and new construction plans. The type, planned use, modification costs, and remaining economic life of storage structures must be considered. Additionally, in determining upgrade requirements, ammunition and explosives

will be consolidated by risk category to the maximum extent consistent with operational, safety, and training requirements. Compensatory security measures will be established for AA&E storage structures that do not meet minimum construction standards. Definitive drawings and specifications for new construction, upgrade, or modification of AA&E storage structures will be coordinated with the engineer office, safety office, and LEA, PMO, or security police office to ensure safety and physical security requirements are met.

d. Qualified engineer personnel will verify the structure composition of AA&E storage facilities (for example, walls, ceilings, roofs, floors, and doors). Statements will be prepared on DA Form 4604-R (Security Construction Statement). Statements will indicate the highest construction category met for storage of AA&E, for example, Category I, II, III, or IV AA&E items and date of applicable regulation. (See para 2-4 for procedures when structural deficiencies exist.) The DA Form 4604-R will be affixed to the interior wall of each AA&E storage facility. The DA Form 4604-R will be locally reproduced on 8½-x 11-inch paper. A copy for reproduction purposes is located at the back of this publication. A blanket statement on DA Form 4604-R may be issued at an installation for all facilities, such as ammunition magazines, constructed according to the same specifications. Under these circumstances a copy of the DA Form 4604-R need not be affixed to the interior wall of each individual storage structure, but must specifically identify the facilities by number and location, and be readily available for inspection. Security construction statements will be reviewed during physical security surveys and inspections. The statements will be revalidated by engineer personnel every 5 years.

e. Physical security personnel will monitor construction of new facilities and renovation of existing facilities. Engineer personnel will coordinate new construction and renovation projects with the local provost marshal or security officer. In addition to meeting construction standards, storage of AA&E will meet physical security criteria, such as Intrusion Detection System (IDS), locks and hasps, lighting, and security patrols, as necessary, for the particular category of AA&E involved.

2-3. Priority lists

The MACOMs will establish a priority list for meeting the security requirements. Requirements will be listed in priority sequence by category for planning, programming, and budgeting purposes. Priority of installation of IDS is as follows:

a. Facilities storing Category I items, when protection is inadequate. Those having the largest quantity will receive initial attention.

b. Facilities storing Category II items.

c. Facilities storing Category III items.

d. Facilities storing Category IV items.

e. Deviations from these priorities will be permitted only when MACOMs have determined that a local threat dictates these deviations.

2-4. Waivers and exceptions

Commanders are authorized 10 percent deviation from the physical security construction standards established by this regulation for existing facilities. Otherwise waivers and exceptions to the physical security requirements of this regulation must be granted by the DCSOPS or his or her delegated authority in accordance with the procedures established by HQDA (DAMO-ODL) under the following provisions:

a. Waiver and exceptions will be considered individually: blanket waivers and exceptions will not be authorized. Requests for waivers or exceptions applying to commercial carrier's transportation minimum security standards (chap 7), together with compensatory measures taken, will be forwarded through the Commander, Military Traffic Management Command, ATTN: MT-SS, 5611 Columbia Pike, Falls Church, VA 22041, to HQDA (DAMO-ODL-S), 400 ARMY PENTAGON, WASH DC 20310-0400.

b. Waivers normally may be granted for a period of 1 year and may be extended only after a review of the circumstances necessitating the extension. Waivers will not exceed 2 years when resource

considerations clearly indicate a continued waiver requirement beyond the normal 1 year waiver period. Justification for such waivers will be required. Each extension will state first extension, second extension, and so forth.

c. Exceptions will be granted only when correction of a deficiency is not feasible or when the security afforded is equivalent to or better than that afforded under the standard criteria.

d. Requests for waivers and exceptions will contain compensatory measures in effect or recommended. Approvals for waivers and exceptions will specify required compensatory measures. Equivalent protection exceptions do not require compensatory measures.

e. Deficiencies that will be corrected within 60 days will not require a waiver or exception; however, compensatory measures will be taken during the interval.

f. Authority to grant waivers and exceptions constituting standards below those prescribed in this regulation must be approved by the DCSOPS or his or her designated authority. U.S. Army Reserve Command requests for waivers and exceptions will be submitted through command channels through the Commander, U.S. Forces Command, Fort McPherson, Georgia 30330-6000, to HQDA (DAMO-ODL-S), 400 ARMY PENTAGON, WASH DC 20310-0400.

g. Requests for physical security waivers or exceptions will be coordinated between the LEA, PMO, or security office of the installation or activity. When structural deficiencies exist, requests also will be coordinated with the supporting engineer.

h. A request for a physical security waiver or an exception will include—

(1) A statement of the problems or deficiencies that constitute standards below those cited in this regulation.

(2) Compensatory measures in effect at AA&E storage facilities to make up for noncompliance with required standards of protection.

(3) Reasons the unit, facility, or installation cannot comply with the requirements of this regulation.

(4) The commander's statement of corrective action taken or planned to correct the deficiencies for which the waiver or exception is required.

(5) Each successive command's recommendation.

i. The unit and the approving headquarters will retain on file the approved waiver or exception, including the documents listed in *c* above.

j. Exceptions will be regarded as generally permanent; however, they will be reviewed at least once every 2 years to determine if they need to be continued. The review will be conducted by the authority who approved the exception.

k. Exceptions previously granted under the criteria of the previous AR 190-11 remain valid under the provisions of this regulation. Such exceptions need not be resubmitted for approval. However, such exceptions will be reviewed as indicated in paragraph *j* above.

2-5. Security of AA&E during training, and aboard ships

Specific criteria and standards for protection of AA&E during training and in shipboard armories or otherwise on board ships will be developed by the MACOM concerned, based on the security philosophy in this regulation. AA&E deployed in the field for training or operational purposes will be secured at all times. The deploying commander will establish and enforce procedures for securing deployed AA&E based on an assessment of the threat, objectives, location, and duration of the deployment. The following guidelines apply:

a. AA&E will be under continuous positive control.

b. AA&E will not be left unattended or unsecured.

c. Persons charged with custody of AA&E will have the capability to sound the alarm if a forceful theft is attempted.

d. A response force will be available to protect the AA&E.

e. A system of supervisory checks will be established to ensure all personnel comply with security procedures. Supervisory checks of the AA&E holding area will be made to ensure the AA&E being guarded have not been tampered with.

f. Control of ammunition and explosives during field training or

range firing will be monitored closely by all officers, noncommissioned officers (NCOs), or civilian equivalents. Upon completion of training, the area(s) will be policed and unused ammunition and explosives collected for turn-in. Personnel will be checked closely to ensure unused ammunition and explosives are not retained. Close supervision by officers, NCOs, or civilian equivalents can eliminate most security problems in the training area.

g. Selection of personnel to perform guard duties at AA&E holding areas will be closely monitored by commanders to ensure only responsible individuals are assigned duty.

2-6. Inspections and audits

Security measures including theft or loss reporting and inventory and accountability procedures for AA&E will be examined during inspections and audits. The status of existing waivers and exceptions will be examined for compliance and continuing necessity.

a. Physical security inspections will be conducted according to AR 190-13, paragraphs 2-11, on facilities in which AA&E governed by this regulation are stored. Additionally, conduct physical security surveys and inspections as follows:

(1) For new AA&E storage facilities, before and immediately after occupancy.

(2) On significant change in facility structure.

(3) After a forced entry or attempted forced entry with or without theft.

(4) When units have received an unsatisfactory rating on physical security survey/inspection, reinspection will be within 6 months. A copy of an unsatisfactory physical security survey or inspection concerning RC and ROTC units will be furnished the installation commander providing logistical report. The followup report will include written comments to show what elements have received copies.

b. Physical security inspections of AA&E deployed in the field for training and operations will be conducted to ensure these items are properly protected.

c. Results of physical security inspections and surveys will be briefed to the commander responsible for the security of the facility or area inspected.

d. Inventory, accountability, issue and turn-in procedures will be included in physical security inspections/surveys to ensure the procedures support the physical security program. AR 710-2, chapter 2, applies to supply operations below the wholesale level. AR 740-26, chapter 2, establishes physical inventory controls at the wholesale level. Chapter 4, this regulation, applies regarding accountability requirements for contractor owned and commercial arms and ammunition.

e. When custody of arms storage facilities is transferred between authorized persons, they will conduct a physical count of the weapons and ammunition stored therein, per requirements in AR 710-2, paragraphs 2-12 and 2-53; and DA Pam 710-2-1, paragraph 9-11. The inventory and change of custody will be conducted and recorded per AR 710-2, paragraphs 2-12 and 2-53; and DA Pam 710-2-1, paragraph 9-11.

2-7. Prohibition

a. Gun clubs and activities under the responsibility of the Director of Marksmanship are not authorized to possess or store Category I or Category II AA&E. The Army National Guard and reserves are not permitted permanently to store Category I AA&E. However, with prior HQDA (DAMO-ODL) approval, they are authorized to temporarily store (not to exceed 90 days) Category I AA&E at ammunition supply points for training of Army National Guard and reserve units. Additionally, Army National Guard and reserve units are authorized temporary custody (not to exceed 14 days) of Category I AA&E for training on military installations. In both instances, physical security measures in chapter 5 and paragraph 7-15c of this regulation must be followed.

b. Reserve Officers Training Corps (ROTC/JROTC) units are not authorized to possess or store Category I AA&E. ROTC units (with the exception of Norwich University, Virginia Military Institute, Texas A&M, the Citadel, and North Georgia College) and gun clubs

are not authorized to permanently possess or store Category II AA&E. ROTC units may retain temporary (overnight/weekend) custody of AA&E for training purposes. This temporary custody will not exceed 72 hours. Physical security measures in chapter 4 will be adhered to.

c. ROTC units may use Category II weapons for familiarization training and field training exercises or marksmanship, on or off a military reservation. Active Army installations, RC facilities and National Guard units are encouraged to provide support to ROTC units when requested.

2-8. Requisition

HQDA (DALO-SMP-S) will establish procedures for item managers to ensure necessary requisition verification of AA&E items. Commanders will include instructions to ensure AA&E requisitions are authorized by designated personnel and released only to properly identified authorized personnel. The procedures will include positive steps for rejecting excess and unauthorized requisitions. (See AR 710-2, para 2-52, for policy on requisitioning.)

2-9. Investigations

A thorough investigation will be made of lost, stolen, or missing AA&E to determine the circumstances surrounding the loss or theft and to fix responsibility as necessary. Inventory and accountability losses will be investigated thoroughly. Before any loss can be attributed to any inventory or accountability discrepancy, it must be determined through investigation that the loss was not the result of theft or misappropriation, per AR 735-5, chapter 13, as appropriate.

a. *Guidance on actions to be taken.* Active Army and RC commanders, or their designated representatives, having direct responsibility for AA&E lost, stolen or missing or the receiving unit or agency will—

(1) Notify the supporting LEA, PM, or security office as soon as the incident is discovered. The notice will be as complete as possible but will not be delayed because of incomplete data. USAR will notify the PMO or LEA responsible for the geographical area. In CONUS, this notice will include the proper FBI field office having area jurisdiction. Civil authorities in overseas areas will be notified according to local policy.

(2) When sensitive AA&E are reported lost, a preliminary investigation will be conducted by the USACIDC to determine criminality before beginning any administrative action (see para 1-4).

(3) Start administrative action per AR 735-5, chapter 13, if the USACIDC investigation determines a crime was not committed. The report of survey or an equal procedure will not be used as a disciplinary or punitive measure. The use of this administrative procedure will not prevent recourse to disciplinary measures when proper. Therefore, the survey will not be used instead of a criminal investigation when one is warranted.

(4) Determine accountability for recovered property per AR 735-5, paragraphs 14-16 and 14-17. A person may be held responsible and be required to pay for a loss. If so, he or she will not be allowed to claim title or obtain ownership of the item if it is recovered.

(5) Consider relative investigative findings in violation of this or other applicable regulations. Take proper punitive action if events warrant.

(6) Request, through channels, that an AR 15-6 investigation be initiated for AA&E in appendix E. This may be used instead of a Report of Survey per AR 735-5, paragraph 13-2.

b. *Property overages.* Property overages will be handled in the same way as stated in a above.

c. *The investigation.* Facts must be presented by the requesting person. The installation, depot, or community commander may then direct that an investigation be initiated. The officer appointed to conduct the investigation will follow procedures per AR 15-6, chapters 3, 4, and 5, and this regulation.

d. *In-transit losses.* Consignees of AA&E shipments will report in-transit losses to the supporting LEA, PMO, or security office.

e. *Inventory adjustments.* Inventory losses or overages may be determined as administrative, computer, or other type accountability errors and not actual losses. This determination will be made only after investigative action has established the cause of the discrepancy. (In no case may a weapon, ammunition, or explosive loss or overage be attributed to inventory error unless the responsible agency, unit, or activity conducts an investigation that, beyond a doubt, excludes the possibility of theft or loss.) When such a decision has been made, DA Form 3056 (Report of Missing/Recovered Firearms, Ammunition and Explosives) will be submitted (fig 2-1). The form will explain—

(1) The rationale for such a decision.

(2) The type of inventory adjustment action taken.

(3) The name, grade, and duty position of the approval authority.

f. *Transportation losses.* Transportation officers, or their designated representatives, will inform the supporting LEA, PMO, or security office when claims or other data reflect the loss of AA&E from shipment or storage. This report will include household goods and losses of privately-owned weapons.

g. *Competitive marksmanship weapons.* Members of the Civilian Marksmanship Program will report the loss of AA&E to the local police or Federal Bureau of Investigation (FBI), and the director of the program.

h. *Criminal investigation reports.* The CG, USACIDC will provide HQDA (DAMO-ODL-S), upon request, copies of completed criminal investigation reports. The reports will describe the loss or theft of AA&E. Reports prepared by the FBI will be included as attachments or as received.

2-10. Training

a. Commanders responsible for AA&E will establish a training program for those personnel responsible for the accountability of these items. The training program will be designed to—

(1) Provide training in inventory and accountability procedures as outlined in applicable 700-series Army regulations.

(2) Fit the requirements of different groups of personnel responsible for accountability.

(3) Indoctrinate personnel in the principles, criteria, and procedures for accountability and inventory, including disciplinary actions against individuals responsible for violating security requirements as prescribed in this regulation.

b. Commanders will initiate an aggressive training program to ensure all unit personnel are aware of their responsibilities for the security and accountability of AA&E. A training program will also be established to ensure requirements of AR 190-56, chapter 4, are kept and to ensure continued proficiency of the guard force. As a minimum, this training will include—

(1) Care and use of weapons, to include qualification firing with assigned weapons within the past 12 months.

(2) Legal authority, responsibility, and jurisdiction of guards on duty, to include apprehension, search and seizure, and use of force.

(3) Physical fitness training.

(4) Guard orders, to include communications and duress procedures.

(5) Duties in the event of emergencies, such as alerts, fire, explosion, civil disturbance, intrusion, attempted seizure, or terrorist incident.

(6) Current criminal threat to AA&E.

(7) Crime prevention.

(8) Common forms of sabotage and espionage, to include current threat situation.

(9) Location of hazardous and vulnerable equipment and materiel, to include high security risk AA&E requiring special attention or more frequent security checks.

(10) Location of fire protection equipment, decontamination stations, electrical switches, and first aid facilities.

(11) Operation and monitoring of intrusion detection system.

(12) Additional training subjects are listed in AR 190-13, paragraph 2-5.

c. Commanders will take continuing action through annual update refresher briefings to ensure that all personnel are aware of their responsibilities for the control and safeguarding of AA&E.

2-11. Personnel

a. Commanders will be selective in assigning personnel to duties involving control of AA&E. Only personnel who are mature, stable, and have shown a willingness and capability to perform assigned tasks in a dependable manner will be assigned to duties which involve responsibility for the control, accountability, and shipment of AA&E. As part of this selection process, personnel assigned duties involved in the control, accountability, and shipment of AA&E will be screened and evaluated using DA Form 7281-R (Command Oriented Arms, Ammunition, and Explosives (AA&E) Security Screening and Evaluation Records). DA Form 7281-R may be locally reproduced on 8½- x 11-inch paper. A copy of this form for reproduction purposes is located in the back of this handbook. Completed forms will be retained on file within the command until the individual departs, or is relieved of his or her AA&E oriented duties. In addition, MACOMs will implement procedures to ensure the following:

(1) Any Government employee (civilian or military) or DA contractor (including commercial carrier) employee operating a vehicle or providing security to a vehicle transporting Category I, II, or classified AA&E will as a minimum have been the subject of a favorable National Agency Check (NAC) or Entrance National Agency Check (ENTNAC), per AR 380-67, paragraph 3-613, except as provided below.

(2) Officers of U.S. flag carriers will be licensed in accordance with U.S. Coast Guard requirements.

(3) Designated carrier employees providing Protection Security Service for the transportation of items classified SECRET will possess a Government-issued SECRET clearance per AR 380-67, paragraph 3-613, and carrier issued identification.

(4) In situations or at locations where these requirements cannot reasonably be accomplished, a properly cleared escort will be provided to accompany the shipment and prevent unauthorized access. Procedures that address these concerns will be prepared by the cognizant security office and will include statements regarding two-person rule and other specific procedures, as appropriate.

b. Commanders will determine the reliability and trustworthiness of the following personnel before they are assigned duties involving control of AA&E:

(1) Personnel authorized unaccompanied access to arms, and Category I and II ammunition and explosives storage facilities.

(2) Personnel authorized to receive, store, or issue arms and Category I and II ammunition and explosives at such storage facilities.

(3) Personnel authorized to issue or control keys to AA&E storage facilities in (1) and (2) above.

c. Commanders will prohibit access to above personnel when doubt exists as to their reliability or trustworthiness. All personnel will be required to undergo a command oriented security screening or an equivalent foreign country check before access is authorized. The security screening check will be designed to provide the commander reasonable assurance that personnel with character traits that raise significant doubt as to their honesty or stability are not afforded access. At a minimum, the command oriented security screening will include:

(1) A personal interview of the individual conducted by his or her immediate commander or supervisor.

(2) A request for medical file check of active duty military personnel.

(3) A personnel records check.

(4) A records check of the provost marshal or security office.

(5) A records check of local civilian law enforcement agencies in the area of the person's residence if permitted by state or local laws.

d. Commanders may deny access to the above personnel when doubt exists as to their reliability or trustworthiness. The following disqualifying factors will be considered:

(1) Record of alcohol abuse.

(2) Record of unauthorized use, sale, or possession of drugs and narcotics.

(3) Record of mental instability or disorders.

(4) Record of judicial or nonjudicial punishment.

(5) Pattern of behavior or actions which are reasonably indicative of a contemptuous attitude toward the law.

(6) Any other character trait, or a record of conduct, or adverse information, which, in the commander's judgment, would be prejudicial to reliability or trustworthiness.

e. Continuing evaluation of all personnel is essential to the success of the AA&E security screening policy. All personnel involved in AA&E will be fully cognizant of their responsibilities to observe and report promptly to the commander any incident or condition which might result in temporary or permanent disqualification of such personnel. Security screening checks in c above will be repeated every 3 years.

Chapter 3 Physical Security Planning

3-1. General

In assessing local requirements for protection, the following factors should be considered:

- a. Threat assessment based on information furnished by local intelligence, criminal investigative, or law enforcement agencies.
- b. Types of AA&E, other sensitive assets, property maintained and mission of the facility.
- c. Location, size, and vulnerability of storage facilities.
- d. Vulnerability of AA&E to theft and loss.
- e. Geographic location within the installation and relative to surrounding population centers.
- f. Availability and responsiveness of security forces.
- g. Availability or existence of security enhancing systems, including:
 - (1) Perimeter barriers.
 - (2) Security lighting.
 - (3) Communication systems.
 - (4) Key and lock controls.
 - (5) Stringent construction criteria for storage areas and armories.
 - (6) Personnel and vehicular entry control.
 - (7) Security training programs.
 - (8) IDS (including closed circuit television (CCTV)).
 - (9) Military Working Dogs.
 - (10) Security guard personnel.

3-2. Coordination

a. In developing a security plan, coordination and close liaison should be effected between the military commander and—

- (1) Adjacent installations or units.
- (2) Federal agencies.
- (3) State and local agencies.
- (4) Similar host country agencies.

b. To the extent permissible, such interaction should allow for an exchange of intelligence information on security measures being employed, contingency plans, and any other information to enhance local security.

c. On an installation, the host activity will assume responsibility for coordinating physical security efforts of all tenants, regardless of the DOD components represented, as outlined in the support agreements and the host activity security plan. Applicable provisions will be included in, or be an appendix to, the support agreement.

(1) Bilateral storage agreements will be used when—

(a) AA&E are stored on the installations or facilities of other U.S. or foreign government agencies or other DOD services.

(b) Consolidated storage facilities are used to store AA&E belonging to more than one unit or organization.

(2) A formal agreement will contain definite assignment of physical security responsibility for the items stored. The agreement will address—

- (a) Maximum quantities to be stored.
- (b) Physical safeguards to be used.
- (c) Frequency of and the responsibility for physical inventories or reconciliation's.
- (d) Reporting of losses for investigations.
- (e) Key control procedures.
- (f) Unit that has overall responsibility for the storage facility.
- (g) Procedures for authorization and identification of individuals to receipt for physically taking custody of AA&E.
- (h) Risk Categories of items to be stored.

d. The formal agreement concerning physical security requirements for AA&E can be implemented by an appendix to a host/tenant activity support agreement or by a Letter of Instruction (LOI).

e. The purpose of such coordination is protection in depth. Authority, jurisdiction, and responsibility must be set forth in a manner that ensures protection and avoids duplication of effort.

3-3. Contingency plans

In most instances it will be necessary to increase security for AA&E and other sensitive property, assets and facilities during periods of natural disasters, natural emergencies, or periods of increased threat from terrorist or criminal elements. Therefore, contingency plans should include provisions for increasing the physical security measures and procedures for storage areas based on the local commander's assessment of the situation. These provisions should be designed for early detection of an attempted intrusion, theft, or interruption of normal security conditions.

3-4. Security threats

a. The security plan will provide for the identification of local threats and should make full use of the investigative resources available in the geographic area to anticipate criminal activities that threaten the physical security of AA&E assets. At a minimum, liaison shall be established with the following agencies.

- (1) Local Federal Bureau of Investigation field office.
- (2) Local law enforcement agencies.
- (3) Intelligence and investigative agencies of the Uniformed Services.

(4) Bureau of Alcohol, Tobacco, and Firearms field office.

(5) Host country agencies where applicable.

b. Installation plans shall address actions to counter thefts by employees. These actions include personnel screening (see para 2-12) and the monitoring to minimize opportunities for employee theft and to detect concealed shortages.

c. The USACIDC is designated as the single MACOM for receiving, analyzing, and disseminating data on the criminal threat to the security of the United States Army. The U.S. Army Intelligence and Security Command (INSCOM) will perform a similar function as related to terrorist, hostile intelligence, demonstrator, and hostile special operation threats.

d. Commanders responsible for storage of AA&E will—

(1) Coordinate with local USACIDC and Military Intelligence (MI) elements to receive current data on any threat to the security of these items. USACIDC and MI personnel shall conduct periodic visits with commanders or their designated representatives. These visits should provide updated threat analysis data based on observed vulnerabilities.

(2) Assess the local requirements for physical security protection.

(3) Incorporate into local security plans or SOPs, procedures for providing the following essential elements of criminal data to the nearest MP and USACIDC representatives as the data become available.

(a) Any intent to steal AA&E.

(b) Suspicious acts indicating that a storage area is being targeted by criminal elements.

(c) Alleged offers to buy or barter for AA&E.

(d) Losses of AA&E, including alleged inventory or administrative errors, together with the events surrounding individual losses.

3-5. Implementation of physical security planning

Commanders at each installation, unit or activity will—

a. Issue instructions regarding all phases of security operations pertinent to the installation, unit or activity. These instructions will be reviewed at least annually for relevance and currency.

b. Develop and implement an effective security awareness program based on current physical security plans.

c. Develop effective countermeasures to prevent or reduce the risk posed by potential threats.

(1) Countermeasures should be consistent with the current physical security plan and the requirements of Army physical security regulations and MACOM supplements.

(2) Physical security countermeasures consist of measures and procedures designed to reduce risk by—

(a) Providing means of alerting response forces to the presence of intruders as soon as possible.

(b) Providing means of delaying intruders long enough to prevent intruders from completing the purpose of the intrusion.

(3) Physical security measures and procedures are specified in Army regulations and MACOM supplements and include—

(a) Area patrols.

(b) Continuous surveillance.

(c) Security fences, doors, walls and locks.

(d) Security vaults.

(e) Security lighting.

(f) IDS.

(g) CCTV.

(h) Clear zones.

(i) Response forces.

d. Sensitive or critical items or equipment should be stored in inner zones of an installation. This may require inventory, segregation, and restorage, where practical by risk categories.

e. Security protection requirements for AA&E will be based on the highest category item stored in magazines or other structures.

3-6. Intrusion Detection Systems

The IDS is an essential part of the physical security system. IDS consists of the combination of electronic components, including sensors, control units, transmission lines, and monitoring units integrated to be capable of detecting one or more types of intrusion into an area protected by the system. IDS includes both interior and exterior systems. The system will report directly to an alarm monitoring station. The system will be an approved DOD standardized system or a MACOM approved commercial system.

a. IDS will include a central control station where alarms will sound and from which a response force can be dispatched. An alarm bell located only at the protected location is not acceptable. The IDS will be designed to cause an alarm to sound at the central control panel whenever the system is turned off or malfunctions. Some means of communication will be provided between the protected areas and the monitoring area to coordinate status changes. Telephone communication should be considered. On and off, access, and secure switches not located at a central control station will be located within the alarmed area. The response force should respond to an activated alarm as soon as possible, but in no case may arrival at the scene exceed 15 minutes. Facilities off military installations, will have a local alarm in addition to monitoring capability. Alarm circuitry that requires alarm signals to be cleared either by the central control station alarm monitor or by entering the protected area will be used. Use of alarm delay switches at RC facilities is discouraged. AA&E storage facilities (other than bulk storage facilities) that require IDS will be protected by at least two types of sensors, one of which is a volumetric sensor. Additional levels of protection, when practical, are encouraged (e.g., duress signaling components) and will be considered for Category I and II arms storage facilities.

b. Facilities having IDS will have signs prominently displayed announcing the presence of IDS. They will be affixed at eye level, when possible, on the exterior of each interior wall that contains an entrance to the protected area. They will be affixed on exterior walls only when the exterior wall contains an entrance to the protected area. Specifications for IDS signs are per appendix F.

c. IDS will include a protected, independent, backup power supply that will provide a minimum of 4 hours of uninterrupted power, or other duration as outlined in the site survey.

d. Where an IDS is used in civilian communities, arrangements will be made to connect alarms to civil police headquarters, private security companies, or a monitoring service from which immediate response can be directed in case of unauthorized entry.

(1) A commercial answering service is not authorized.

(2) Coordination is required with civil authorities to ensure a response force can be directed to respond immediately.

e. A daily log will be maintained of all alarms received, and at a minimum will include—

(1) The nature of the alarm; for example, intrusion system failure or nuisance alarm.

(2) The date and time the alarm was received.

(3) The location, and action taken in response to the alarm.

f. Logs will be maintained for a minimum of 90 days and will be reviewed periodically to identify, monitor, and correct IDS reliability problems.

(1) DA Form 4930-R (Alarm/Intrusion Detection Record), may be used to record alarms received. DA Form 4930-R will be locally reproduced on 8½- x 11-inch paper. A copy for reproduction purposes is located at the back of this handbook.

(2) Computer generated printout of alarms may be used as a substitute provided all required information has been included or supplemental information is included in a log.

(3) Serious or recurring problem areas will be described in writing and sent through command channels to CDR, U.S. Army Belvoir R&D Center, ATTN: AMCPM-PSE, Fort Belvoir, VA 22060-5606.

g. Transmission lines for the alarm circuits will have line supervision (connecting lines will be electrically supervised to detect evidence of tampering or malfunction and any visible lines must be inspected weekly) or two independent means of alarm signal transmission from the alarm area to the monitoring station must be provided. One of the two independent means of alarm signal transmission must be either a long-range radio or cellular telephone link. Two undedicated, hardwire telephone links are not acceptable. The dual transmission equipment must continuously monitor the integrity of both the telephone wire line and cellular or long range radio links. Upon loss of either communication path, the system must immediately initiate notification to the monitoring facility via the other communication link. Because of the criticality of the information to be transmitted, the dual transmission equipment must be able to seize control of the communication links, even if that link is already in use. Physical protection of both communication links is critical. Therefore, the hardware communication links is critical. Therefore, the hardware communications link will be enclosed in metallic conduit from the protected area to wherever the communication is made to the telephone network. Communications equipment, including cellular equipment, will be mounted in tamper protected enclosures. Communications equipment, including cellular antennas where possible, will be located within the protected area. Additionally, a protected backup independent power source of 8 hours minimum duration will be provided. Telephone communication between a central control station and alarm zones to provide for controlled entry by authorized personnel should be considered as an adjunct to the IDS. Systems will be tested quarterly and a log maintained at least 1 year for recording all tests. Visible lines will be inspected on a regular basis.

h. Following requirements also apply:

(1) IDS will be considered for security classification if it meets the specific classifying criteria per AR 380-5, chapter 2 and appendix G. If classified, appropriate personnel security clearance must be obtained.

(2) Only authorized personnel should be allowed access to unclassified IDS installation wiring diagrams for a specific facility or location. This also applies to information on known, specific vulnerabilities or counter-measures affecting the IDS.

(3) Civilian employees whose duties involve the design, operation, or maintenance of IDS require completion of a favorable National Agency Check with written inquiries (NACI) prior to appointment to such noncritical-sensitive positions. Civilian contractor employees must possess a minimum security clearance of CONFIDENTIAL, granted in accordance with AR 380-67, paragraph 3-400.

(4) A check of the National Crime Information Center (NCIC) for installers and maintainers of unclassified IDS is a command decision. The decision will be based on—

(a) The sensitivity of the area to be protected.

(b) The need for quality control over personnel having access.

(5) All installers, maintainers, and operators of unclassified IDS will undergo a command-oriented security check. The security

check should be made with the area provost marshal (PM) or other agencies that might have information on file bearing on the honesty or stability of the individual. Requirement for above command-oriented security checks should be based on local jurisdiction policies, the local threat and sensitivity, and vulnerability of the facility protected.

(6) All keys associated with IDS components will be safeguarded and controlled according to paragraph 3-8.

(a) Monthly Joint-Service Interior Detection System (J-SIIDS) operational checks to ensure activation of the sensors will be conducted utilizing appendix K. In addition, a visual inspection of components and conduit for evidence of tampering will be conducted during the monthly inspection. Commercial intrusion detection systems employing sensors equipped with a remote-test feature that activate the same sensing phenomenology as would an actual intruder do not require operational checks by unit personnel. Each zone component will be checked and tested by alarm maintenance personnel a minimum of every six months during preventive maintenance. Commercial intrusion detection systems that do not have a remote-test feature will be tested monthly utilizing the manufacturers operational test.

(b) Installation physical security inspectors will include a check of each IDS during any security inspection to verify the IDS is operating satisfactorily. Checks will include inspection of components and conduit for evidence of tampering. Checks will also be made of unit log entries and records regarding operation and inspection of IDS.

(7) Before accepting a newly installed IDS system for operation, an inspection will be conducted by qualified technical personnel to ensure the system meets all minimum acceptable standards. The statement of verification will be maintained in the using unit or organization files. DA Form 4604-R may be used to record the verification.

(8) Maintenance of IDS will be provided by personnel qualified in installation and repair of IDS. Such maintenance will be performed consistent with operational requirements to ensure continuous operation and reliability of each system in use.

(9) All intrusion detection equipment enclosures with removable covers will be equipped with tamper switches. The tamper detection will be continuously monitored whether the system is in the "secure" or the "access" mode of operation. Enclosures that are not routinely opened for maintenance purposes (such as pull boxes) shall be equipped with tamper switches.

3-7. Security forces

A security or guard patrol or unit personnel will periodically check facilities and areas used to store sensitive or critical items or equipment as prescribed herein and as dictated by a threat and vulnerability analysis. Checks will be conducted on an irregular basis during nonduty hours to avoid establishment of a pattern. Security checks will be made to ensure unauthorized personnel are not in the area and the structures are intact and have not been broken into. During periods of increased vigilance because of a threat situation, security patrols will physically inspect doors and locks on all storage structures in their area of responsibility. Selection of personnel to perform guard duties will be closely monitored by commanders to ensure only properly trained and reliable individuals are assigned duty. Supervisory checks will be conducted to ensure guard duties are being performed properly.

a. Security patrols may be conducted by military personnel; civilian security personnel, including contract personnel; U.S. Marshal Service; or State, local, or campus police.

b. DA-controlled security forces will be provided with adequate means of communication.

c. Security forces personnel (e.g., guards, security patrols, security reaction forces) may be armed with appropriate weapons and ammunition at the discretion of the commander concerned. If such personnel are armed, provisions of AR 190-14, chapters 2 and 4 apply.

d. Guard procedures will be reviewed at least annually and revised if necessary to provide greater application of security measures, and will place special emphasis on guard post locations and guard orientation concerning duties to be performed.

e. Inspections and guard checks will be increased during nights, weekends, and holidays to provide for deterrence of violations and early detection of loss. These checks will be recorded and will consist of an inspection of the building or facility including all doors and windows. Records of these checks will be maintained in an active file for a minimum of 90 days, and then destroyed.

f. Law enforcement patrol plans will be coordinated and integrated with the guard plan or other security plans and programs to the maximum extent possible. When facilities are located in civilian communities, liaison will be established with local civil police agencies to ensure that periodic surveillance is conducted and that a coordination plan for security exits.

3-8. Key and lock controls

a. Only approved locks and locking devices (including hasps and chains) will be used. See the consolidated glossary for a list of DA-approved locks and hasps. All questions regarding the identity of approved commercial equivalent locks and locking devices (including hasps and chains) meeting Military Specifications will be addressed to the Naval Civil Engineering Laboratory (NCEL), Port Hueneme, CA. Personnel can obtain the most current version of the specifications by contacting the NCEL at DSN 360-5927 or (805) 982-5927. Keys will be signed out to authorized personnel, as needed, on a key control register. The DA Form 5513-R (Key Control Register and Inventory) is approved for use to meet the requirements of this regulation. DA Form 5513-R will be locally or electronically reproduced on 8½- x 11-inch paper. The electronically generated form must contain all data elements and follow exact format of the existing printed form. The form number of the electronically generated form will be shown as DA Form 5513-R-E and the date will be the same as the date of the current edition of the printed form. A copy for reproduction purposes is located at the back of this handbook. When not in use, the key control register will be kept in a locked container that does not contain or store classified material and to which access is controlled. Keys and combinations to locks for AA&E storage facilities, arms racks, IDS (operational or maintenance), or key containers will not be removed from the installation except to provide for protected storage elsewhere. Keys to locks securing key containers will be afforded physical protection equivalent to that provided by the key container itself. Keys to AA&E storage buildings, rooms, racks, containers, and IDS will be maintained separately from other keys, and accessible only to those individuals whose official duties require access to them. A current roster of these individuals will be kept within the unit, agency, or organization. The roster will be protected from public view. The roster will be signed by the designated official and contain the names of those individuals authorized to receive keys from the key custodian. (See c below). At no time will keys be in the custody of a person not listed on the roster. A key control register will be maintained at the unit level to ensure continuous accountability for keys, ensure positive control of keys, and establish responsibility for the custody of stored AA&E. Key control registers will contain printed name and signature of the individual receiving the key, date and hour of issuance, serial number or other identifying information of the key, printed name and signature of the person issuing the key, date and hour key was returned, and the printed name and signature of the individual receiving the returned key. Completed key control registers will be retained in files for a minimum of 90 days and then disposed of per established MACOM procedures.

b. Keys to AA&E storage buildings, rooms, racks, containers, and IDS may be secured together in the same key container. However, keys required for maintenance and repair of IDS, including keys to the control unit door and monitor cabinet, will be kept separate from other operational IDS keys and access permitted only to authorized maintenance personnel. Under no circumstances will

IDS or AA&E keys or locks, or alternate keys or locks be placed in any security container that contains or stores classified material.

(1) When arms and ammunition are stored in the same areas, keys to those storage areas may be maintained together, but separately from other keys that do not pertain to AA&E storage. The number of keys will be held to the minimum essential. Keys may not be left unattended or unsecured at any time.

(2) When not attended or being used keys will be stored in containers of at least 20-gauge steel or material of equivalent strength, and equipped with GSA-approved low (secondary) security padlocks or GSA-approved built-in 3-position changeable combination locks, or in Class 5 or Class 6 GSA-approved, 3 position, changeable combination container that do not contain or store classified material. Combinations will be recorded on SF 700 (Security Container Information), sealed in the envelope provided, and stored in a container per AR 380-5, chapter 5. Keys and combinations to locks will be accounted for at all times. Key containers weighing less than 500 pounds will be fastened to the structure with bolts or chains equipped with secondary padlocks to preclude easy removal.

(3) In the event of lost, misplaced, or stolen keys, an investigation will be conducted immediately. The affected locks or cores to locks will be replaced immediately. Replacement or reserve locks, cores, and keys will be secured to preclude access by unauthorized individuals. The use of a master key system or multiple key system is prohibited.

c. A key and lock custodian, where duties include assuring proper handling of keys and locks, will be appointed in writing. Only the commander and the key custodian (or alternate, if appointed) will issue and receive keys to and from individuals on the key access roster (*a* above). Personnel listed on the roster may transfer custody, in writing, among themselves. The key and lock custodian's duties will also include procurement and receipt of keys and locks, and investigation of lost or stolen keys. The key and lock custodian will maintain a record to identify each key and lock and combinations to locks used by the activity, including replacement or reserve keys and locks. The record will show the current location and custody of each key and lock. The key and lock custodian(s) will ensure that individuals who are designated to issue, receive, and account for keys in their absence, clearly understand local key control procedures. The key and lock custodian will maintain a key control register at all times to ensure continuous accountability for keys of locks used to secure AA&E.

d. Padlocks will be locked to the staple or hasp when the area of container is open to preclude theft, loss, or substitution of the lock.

e. Padlocks and their keys will be inventoried by serial number semiannually. Padlocks and keys which do not have a serial number will be given one. This number will be inscribed on the lock or key as appropriate. The inventory records will be retained in unit files for a minimum of 1 year and then disposed of per established MACOM procedures. A key and lock inventory will contain a record of keys, locks, key serial numbers, lock serial numbers, location, and the number of keys maintained for each lock. This record will be secured in the key depository.

f. When individuals are charged with the responsibility for safeguarding or otherwise having keys immediately available, they will sign for a sealed container of keys. A sealed container is a locked and sealed key container, or a sealed envelope (SF 700 per AR 380-5, paragraph 5-104) containing the key or combination to the key container. When the sealed container of keys is transferred from one individual to another, the unbroken seal is evidence that the keys have not been disturbed. The seal need not be broken for inventory of keys. However, evidence of tampering with a sealed container will require an inventory of the keys and such other action as may be required by the commander concerned. If the keys are not placed in a sealed container, an inventory of keys will be made by serial number or other identifying information of the key (e.g., stamped number on key). The inventory and change of custody will be recorded on the DA Form 5513-R. See paragraph 2-12, for

requirements to determine reliability of personnel authorized to issue and control keys to arms and category I and II ammunition and explosives storage facilities.

g. Combinations to locks on vault doors or GSA approved Class 5 or Class 6 security containers will be changed annually or upon change of custodian, armorer, or other person having knowledge of the combination, or when the combination has been subject to possible compromise. Combinations will also be changed when a container is first put into service. The combination will be recorded using SF 700, sealed in the envelope provided, and stored in a container meeting storage requirements per AR 380-5, chapter 5. No other written record of the combination will be kept. Controls will be established to ensure that the envelopes containing combinations to locks or containers are not made available to unauthorized personnel.

h. Replacement of lock cylinders and broken keys for high security locks may be requested through normal supply channels. Requests will be coordinated through the key control custodian. MACOMs are designated as approval authorities for any deviation in key procurement procedures.

Chapter 4 Protection of Arms

4-1. General

This chapter prescribes the criteria and standards for the protection of arms in custody of DA Components, COE drawing DEF 141-90-04 depicts arms storage room construction meeting the criteria and standards prescribed by this regulation. Arms, including firearms in rod and gun club facilities, will be stored in an arms room, modular vault, or an arms storage building per the requirements of this chapter.

a. When storage in an arms storage room, modular vault, or building will impede training or operational requirements, arms may be stored or installed on the naval craft, vehicle, or aircraft to which assigned or in other configurations per this regulation and as specified by HQDA. Specific guidance issued by HQDA (DAMO-ODL) will be furnished the Deputy Under Secretary of Defense for Policy (DUSDP) within 90 days. Weapons stored or installed in tanks, vehicles, or aircraft will be protected as part of the overall system in which they are stored or installed.

(1) Commanders will establish appropriate security measures to ensure weapons stored or installed in tanks, vehicles, or aircraft are protected at all times, particularly when tanks, vehicles, or aircraft are unmanned. The following guidance applies:

(a) When not in use, tanks, vehicles, or aircraft containing weapons will be parked inside a secure motor pool or an aircraft park area. Level III security III security measures in AR 190-51, paragraphs 3-3 and 3-5, apply.

(b) When operational readiness permits, weapons mounted on tanks, vehicles, or aircraft that are accessible and easily removable will be dismounted and secured inside the locked tank, vehicle, or aircraft, or other secure location. Weapons that are dismounted and secured inside the locked tank, vehicle, or aircraft and weapons that remain installed on board, will be made inoperative by removal of barrels or other essential firing components. Such components will be secured in a locked metal container inside the tank, vehicle, or aircraft, or other secure location. The container will be secured to the tank, vehicle, aircraft, or other secure structure with bolts or chains equipped with secondary padlocks. Spare barrels may be stored inside a locked, totally enclosed armored combat vehicle when the other essential firing components are secured in an arms storage room and the vehicle is parked inside a motor park which provides continuous surveillance by guards and Level III security measures per AR 190-51, paragraph 3-3 and 3-5.

(c) Weapon systems that are impractical to dismount, due to operational readiness or damage to the weapon system will be made inoperative by the removal of essential component or components. Such components will be secured as in (b) above. Electrical power

may be considered an essential component on the 20MM and 30MM weapon systems.

(d) When electrical power is the only essential component removed from the weapons systems, ammunition for those weapons systems will not be stored on board the tank, vehicle, or aircraft. Level II security measures per AR 190-51, paragraph 3-3 and 3-5 apply.

(2) Large weapons (e.g., crew served weapons and mortar tubes) that cannot be secured in arms rooms, or other arms storage facilities, because of inadequate storage space, may be stored in a locked, totally enclosed armored vehicle. In such cases, security requirements in (1) above apply.

(3) Large weapons that cannot be secured in arms rooms, as stated above, may also be secured in other secure locations, such as a room made secure by compensatory measures. In such cases, protection and surveillance by guard or other personnel will be provided according to the risk category of the weapons involved. Such weapons will be rendered inoperable according to the requirements prescribed in (b) above.

(4) During maintenance support operations, weapon components may be stored in a storage facility meeting security requirements according to the risk category of the items involved.

(5) MACOM commanders may authorize storage of small quantities of Category IV arms in a GSA approved Class 5 security containers not storing classified documents or materials without IDS, security lighting, and security patrol requirements. MACOMs will decide the number to be stored on the basis of mission and operational requirements in conjunction with an assessment of vulnerability and threat conditions. Provisions of above apply only to small units (e.g., USACIDC detachment) that must store a small quantity of prescribed weapons for operational requirements.

b. Individuals issued, or in possession of arms, are responsible for security of this property while it is entrusted to their care.

(1) Each weapon issued for training, operations, or any other reasons will be carried on the person of the individual to whom issued at all times or it will be properly safeguarded and secured. Except during emergencies, weapons will not be entrusted to the custody of any other person except those responsible for the security of operational weapons. These persons will comply with issue and turn-in procedures. Local procedures will be established to secure and account for the weapons of personnel medically evacuated during training.

(2) During field exercises and training, pistols and revolvers issued to persons will be secured to the person by either a locally made lanyard or military issued field lanyards (NSN 8465-00-965-1705).

(3) Pistols or revolvers that lack a device to affix the lanyard will be secured by running the lanyard through the pistol/revolver trigger guard during field and training exercises when drawing the pistol/revolver is not contemplated. If drawing the pistol/revolver is contemplated, such pistols/revolvers are exempt from the lanyard requirements.

(4) Pistols and revolvers issued for operational purposes need not be secured by a lanyard except where specified in other regulations.

(5) Local commanders will prescribe specific accountability and security measured to prevent the loss of other weapons assigned to persons.

(6) USACIDC may authorize individuals to retain their assigned weapons in their private quarters if the necessity is dictated by operational requirements. In such instances, USACIDC will establish accountability safeguards and security measures.

4-2. Storage and supplemental controls

a. Storage and supplemental controls.

(1) New facilities built for storage of Category II arms will meet the facility criteria in appendix G.

(2) An existing facility in which Category II, III, and IV arms are stored together will meet the criteria for facilities storing Category II arms in appendix G unless the MACOM commander determines it to have equivalent or better security.

(3) Category II arms stored in arms storage buildings or rooms that do not meet or exceed the criteria for Category II arms may be stored in GSA approved Class 5 security containers not containing classified documents or materials, or in a safe-type steel file container not containing classified documents or materials, having a 3-position, dial-type, combination lock providing forced entry protection as approved by GSA (Federal Specification AA-F-363B, as amended) or in approved modular vaults not containing classified documents or materials with GSA approved Class 5 vault doors or GSA approved Class 5 armory doors. Modular vaults meeting Federal Specification AA-V-2737 may be used to meet this requirement. Vaults, containers and safes will be under 24 hour armed guard surveillance or protected by an approved IDS and the facility will be checked by a security patrol at least once every 8 hours.

(4) Category III and Category IV arms will be stored in facilities meeting or exceeding the criteria in appendix G.

(5) Categories III and IV arms that are stored in facilities that do not meet or exceed the criteria for Categories III and IV arms may be stored in a GSA approved Class 5 security container, not containing classified material or documents, or a safe-type steel file cabinet not containing classified material or providing forced entry protection as approved by GSA (Federal Specification AA-F-363B, as amended). Containers weighing less than 500 pounds will be secured to the structure.

(6) Category IV arms that are stored in unmanned facilities not equipped with an IDS will be checked by a security or guard patrol at irregular intervals not to exceed 24 hours.

b. Rescinded.

c. Arms racks and storage containers.

(1) When not in use, arms will be stored in banded crates, metal containers, approved standard issue racks or locally fabricated arms racks, and secured in approved weapons storage facilities. Standard issue approved metal wall lockers or metal cabinets may be used. Crates or containers will be banded, locked, or sealed in a way that will prevent weapon removal without leaving visible signs of tampering. Screws or bolts used in assembling containers, lockers, or cabinets will be made secure to prevent disassembly.

(2) All arms racks or containers will be locked with approved secondary padlocks. In facilities that are not manned 24 hours a day, rifle racks and containers weighing less than 500 pounds will be fastened to the structure (or fastened together in groups totaling more than 500 pounds) with bolts or with chains equipped with secondary padlocks. Bolts used to secure racks will be spot welded, brazed, or peened to prevent easy removal. Chains used to secure racks (and containers) will be heavy duty hardened steel, welded, straight links steel, galvanized of at least 5/16-inch thickness, or of equivalent resistance to force required to cut or break a secondary padlock.

(3) Hinged locking bars for racks will have the hinge pins welded or otherwise secured to prevent easy removal. Locally fabricated racks will provide, at a minimum, security equivalent to standard issue racks. All racks will be so constructed as to prevent the removal of a weapon by disassembly. Locally fabricated arms racks will provide protection from forced entry equip to the M12 rack (M-16 rifle rack). Technical data package (TDP) sketches and assembly instructions for local fabrication of arms racks may be requested from CDR, U.S. Army Armament, Munitions and Chemical Command, ATTN: AMSMC-MAG-SS, Rock Island, IL 61299-6000. The local engineer will certify that locally fabricated arms racks are constructed according to TDP specifications and drawings. The engineer certification will serve as security verification for adequacy of such racks. The certification will be maintained on file in the location where such racks are used.

(4) When weapons are in transit, stored in depots or warehouses or held for contingencies, the weapons crates or containers need not be fastened to the structure. However, such crates or containers will be banded or locked and sealed in a way that will prevent weapon removal without leaving visible signs of tampering. The facilities and buildings in which these weapons are stored will meet the structure and other security requirements of this regulation. Arms

being unpacked or packed for shipping, or in assembly-line configuration in a maintenance repair or rebuild facility, do not require storage in racks or containers. However, the facilities in which they are stored will meet the structure and other security requirements of this regulation.

d. Security lighting.

(1) Interior and exterior lighting will be provided for all arms storage buildings, buildings in which arms storage rooms are located, and arms storage rooms. The lighting will be sufficient to allow guards (or individuals responsible for maintaining surveillance) to see illegal acts such as forced entry, or the unauthorized removal of arms during hours of reduced visibility.

(2) Areas appropriate for lighting include entrances to buildings, corridors, and arms rooms. When an arms room is located inside a building, the entrance door to the arms room will be illuminated. Arms rooms that are located within another room (for example, supply room), do not require security lighting over the arms room door. When an arms room is located inside another secured room, the exterior door to that room will be illuminated.

(3) Security lighting will also be provided for motor pools, hangars, and outdoor parking areas for vehicles or aircraft that have weapons installed or stored on board.

(4) Switches for exterior lights will be installed so that they are not accessible to unauthorized individuals.

(5) Exterior lights will be covered with wire mesh screen, or equipped with vandal resistant lenses, that will prevent the lights from being broken by thrown objects.

e. Doors, locks, and locking devices.

(1) Except for GSA approved Class 5 steel vault doors with built-in, three position, changeable combination locks, doors used for access to arms storage rooms or structures will be locked with an approved high security locking device or high security padlock and hasp providing comparable protection to the locks. An approved high security shrouded hasp will be used to secure Category I and II AA&E storage facilities to enhance their security. Doors used for access to arms storage rooms will be locked with approved locks and hasps. On existing storage facilities equipped with double-door protection, high security padlocks and hasps will be used on the most secure door. Secondary padlocks will be used to secure the other door of the double-door concept. Other doors that cannot be secured from the inside with locking bars or dead bolts will be secured on the inside with approved secondary padlocks, e.g., issue window or portals. When high security hasps are installed, locking bars and T-pins should be left in place to aid in opening and closing doors and prevent any future misalignment of the hasps. Panic hardware, when required, will be installed to prevent opening the door by tampering from the outside. Panic hardware will meet safety, fire, and building codes and be approved by the Underwriters Laboratory or host country requirements as applicable.

(2) Key and lock controls will be established per paragraph 3-8.

(3) Facilities in which vehicles or aircraft are stored with sensitive items aboard will be secured by approved secondary padlocks. Aircraft will be secured with manufacturer-installed or approved modification work order door-locking devices when not in use. All hatches and other openings to track vehicles which cannot be secured from the inside will be secured from the outside with approved secondary padlocks.

f. Additional controls.

(1) *IDS for arms storage facilities.* Arms room storing Category II arms, GSA-approved Class 5 Weapons Storage Cabinets, and GSA approved security modular vaults will be provided with an approved IDS. Facilities without an operational IDS require constant surveillance by an armed guards for Category II arms while Category III and IV facilities require only constant surveillance. In the event that the arming of guards off a military installation is prohibited by State or territorial law, a request for exception to this requirement according to paragraph 2-4 is required. The exception will include the rationale and justification for not utilizing armed guards and the compensatory security measures taken.

(2) *Security patrols.*

(a) Facilities will be checked by a security patrol periodically as dictated by any threat and by the vulnerability of the facility. For Category II IDS protected facilities, the intervals between checks will not exceed 8 hours. For Category III and IV facilities, the intervals between checks will be once every 24 hours and once every 48 hours for IDS protected storage facilities.

(b) Facilities storing arms outside a military installation will be checked by a security patrol on an irregular basis at an interval not to exceed 24 hours.

(3) *Rendering weapons inoperable.* If the facility is not located on a military installation, weapon will be rendered inoperable by the method shown in table 4-1 under any of the conditions below:

(a) A facility does not meet structural criteria.

(b) A threat is received.

(c) An IDS is inoperative for a period of 24 hours or longer.

(d) During periods of annual field training, if arms are left in the facility.

(e) Decision of the commander having direct security responsibility for the facility.

(4) *Storing removed items.* The item(s) removed for the purpose of rendering a weapon inoperable will be tagged with the weapons serial number to ensure return to the same weapon and secured in a separate building. Etching of weapon's serial number on the removed parts is prohibited. The removed items will be stored in a locked container in a secure area away from the arms storage facility. If a secure area is not available for separate storage of these items, the container will be stored in the arms storage facility and secured to the structure with an approved lock and chain or equal methods when the container weighs less than 500 pounds.

Table 4-1
Methods for rendering Small Arms inoperable

Weapon: Carbine, Caliber .30 M1

Method: Remove bolt assembly

Weapon: Gun, Auto 25mm M242

Method: Remove bolt and track assembly

Weapon: Launcher, grenade 40mm M79

Method: Remove barrel assembly

Weapon: Launcher, grenade 40mm M203

Method: Remove barrel assembly

Weapon: MG, Caliber .50 M2 series

Method: Remove bolt assembly

Weapon: MG, 7.62mm M60 series

Method: Remove breech block

Weapon: MG, 7.62mm M73 series

Method: Remove breech block

Weapon: MG, Caliber .50 M85

Method: Remove bolt assembly

Weapon: MG, 7.62mm M219

Method: Remove Breech block

Weapon: MG, 7.62mm M240 series

Method: Remove bolt and operating rod assembly

Weapon: MG, 5.56mm 249

Method: Remove bolt and slide assembly

Weapon: MG, 40mm MK19 Mod 3

Method: Remove bolt assembly

Weapon: Pistol, semi-auto, Caliber .45 M1911A1

Method: Remove firing pin and spring. Leave stop installed to prevent damage of firing pin hold

Weapon: Pistol, semi-auto, Caliber .22

Method: Remove bolt or slide assembly

Weapon: Pistol, semi-auto, 9mm M9

Method: Remove firing pin assembly, recoil spring, and the spring guide from the spring assembly

Table 4-1
Methods for rendering Small Arms inoperable—Continued

Weapon: Rifle, Caliber .22—all types Method: Remove bolt assembly
Weapon: Rifle, Caliber .30 M1 series Method: Remove bolt assembly
Weapon: Rifle, 7.62mm M14 series Method: Remove bolt assembly
Weapon: Rifle, 5.56mm, M16 series Method: Remove firing pin
Weapon: Rifle, Caliber .30 M1918 Method: Remove firing pin series
Weapon: Shotgun, 12 gauge, riot type Method: Remove barrel assembly
Weapon: Sub MG, Caliber .45 M1 series Method: Remove bolt assembly
Weapon: Sub MG, Caliber .45 M3 series Method: Remove bolt assembly
Weapon: Sub MG, 5.56mm M231 Method: Remove firing pin
Weapon: Recoilless rifle, 90mm M67 Method: Remove breech block
Weapon: Revolver, Colt Method: Remove cylinder and crane assembly
Weapon: Revolver, Ruger Method: Remove strut assembly
Weapon: Revolver, Smith and Wesson Method: Remove cylinder and yoke assembly

g. RC weapons. The Army policy of close cooperation between Active Army and RC activities is an essential element in eliminating the theft or loss of AA&E. At times, RC activities may need to use local Active Army facilities for the temporary storage of AA&E as the result of emergency situations; for example, during vehicle breakdown when transporting weapons, when an increased threat situation is forecast or present, and during rifle matches. Active Army facilities are authorized and encouraged to assist in temporarily securing RC items. However, the receiving unit will ensure the accountability (number and type items, including serial numbers) of those items accepted for storage. The above policy also applies between Reserve components as well as the temporary storage of Active Army stocks at Reserve storage facilities.

4-3. Storage of classified weapon trainers

Because of security classification, nuclear weapon trainers or other classified weapon trainers may be stored in separate locked containers, or wire cages, in arms storage facilities when alternate facilities are not available per AR 380-5, chapter 5. Commanders will prescribe supplementary measures and controls to prevent unauthorized access and ensure the items are accounted for at all times.

4-4. Consolidated arms rooms

Arms belonging to more than one unit or organization may be stored in the same arms room or arms storage facility. Arms will be identified by unit. One commander will be designated as having responsibility for the overall security of the consolidated storage facility. Access controls will be established to ensure protection of each unit's arms. Procedures will also be established to fix responsibility for issue, receipt, and physical accountability for arms, including ammunition, and all other sensitive items, stored in the consolidated storage facility, per AR 710-2, paragraph 2-12; and DA Pam 710-2-1, paragraph 9-11. Where feasible, unit arms will be separated by secondary padlocks. If this is done, each unit will maintain sensitive items. Units with small quantities of arms may

use locked metal containers instead of separation by partitions. In all cases, one designated commander will continue to have responsibility for the overall security of the consolidated storage facility, including access to that facility. COE drawing DEF 33-33-18 depicts a consolidated arms storage building meeting this criteria. COE drawing STD 40-21-01 depicts expanded metal mesh security cage. Units will provide the commander responsible for the overall security of the consolidated storage facility. Procedures for such consolidated arrangements will be established in SOP of the consolidated storage facility, or in the SOP of the higher headquarters.

4-5. Privately-owned weapons and ammunition

a. Commanders will ensure privately-owned arms and ammunition (including authorized war trophies) are protected on their installations and facilities. Based upon local requirements and availability of resources, Commanders may establish and maintain a system for the registration of privately owned arms on their installations. Commanders will—

(1) Secure arms and ammunition in the installation armory or unit arms rooms in approved locked containers separate from the military AA&E. Storage requirements in this regulation apply. Installation commanders may authorize storage of these items in other locations on military installations, provided they are properly secured.

(2) Account for and inventory arms and ammunition.

(a) A DA Form 3749 (Weapons Receipt) will be issued for each privately-owned weapon secured in the arms rooms.

(b) Privately-owned weapons will be inventoried in conjunction with, and at the frequency of the inventory of Government weapons.

(c) Commanders will establish limits on the quantity and type of privately owned ammunition stored in the arms room, based upon availability of space and safety considerations.

(3) Post applicable local regulations and State and local law information on ownership, registration, and possession of weapons and ammunition on unit bulletin boards.

(4) Conduct inspections per AR 190-13, paragraph 2-8, and this regulation to ensure proper storage and control.

(5) Process unauthorized AA&E per AR 190-22, paragraph 3-4.

(6) Prohibit retention and storage of incendiary devices and explosives.

(7) Brief all newly assigned persons on this regulation and subordinate command guidance. All personnel will be made aware of changes.

b. Personnel keeping or storing privately owned arms and ammunition (including authorized war trophies) on military installation will—

(1) Comply with local regulations and local and State laws on ownership, possession, registration, off-post transport, and use.

(2) Store both arms and ammunition in the unit arms room or other locations authorized by the installation commander.

(3) Follow local security and safety regulations. Safeguard the unit issued DA Form 3749 for turn-in to the unit armorer when the weapon is withdrawn from the arms room.

(4) Withdraw privately-owned weapons and ammunition from the unit arms rooms only upon approval of the unit commander or the commander's authorized representative.

(5) Ship or store arms and ammunition as personal property, if authorized, per AR 55-355, paragraph 50-12. When loss occurs, notify the local provost marshal or security officer immediately.

(6) Comply with the National Firearms Act of 1968 when receiving or bringing arms into the United States. Automatic arms must be turned over to the Bureau of Alcohol, Tobacco and Firearms (BATF), or brought under Army control.

4-6. Weapons and ammunition for marksmanship matches and other special purposes

a. Weapons and ammunition for marksmanship matches and other purposes will be protected at all times.

b. When not in use, marksmanship weapons used in matches or

ceremonies away from a military installation will be stored in authorized active, USAR, or ROTC arms rooms. Weapons and ammunition may be stored in a civilian police station under police control. If these facilities are not available, weapons and ammunition will be stored in locked containers or rooms attended at all times by at least one team member or designated person.

c. The storage of automatic weapons in other than an authorized arms room is prohibited.

d. Exceptions to *b* above for marksmanship weapons are authorized USAR and ROTC marksmanship personnel when firing as persons (away from their teams). Exception criteria are as follows:

(1) Authority to grant exceptions is delegated to MACOM commanders and heads of Army staff agencies commanding field operating agencies and activities. This authority may not be further delegated.

(2) Eligibility is limited to persons who are active members representing an ROTC region, a major USAR command, or higher-level team. Eligibility is limited only for a specified period of marksmanship participation. Weapons will be returned to the proper authorized arms rooms for storage upon completing the marksmanship match.

(3) Exceptions will be held to a minimum. Each written request for exception will include a statement that other secure facilities are not available. Each request will outline compensatory measures to be applied. If weapons are to be stored in private homes, the weapons will be secured in a locked, metal container. The container will not be prominently displayed. It will be secured to a firm structure in the home.

(4) Arms used during matches or practice away from the facility and not secured as in (3) above will be stored under *b* above.

4-7. Commercial weapons and ammunition

a. Commercial arms and ammunition in stock or maintained by nonappropriated fund activities and installation-approved private organization activities will be protected according to security and accountability procedures equal to those prescribed in this regulation for military arms and ammunition. Commanders will prescribe specific inventory accountability procedures to ensure protection of these items against theft or loss.

b. Commands will discontinue the sale or possession of weapons and ammunition by nonappropriated fund activities failing to comply with this regulation.

(1) During nonduty hours, commercial arms and ammunition will be stored in facilities meeting the requirements of this chapter. The storage area will be protected by a certified, approved IDS.

(2) When displayed, arms and ammunition will be under the surveillance of sales personnel. Arms and ammunition will be secured in such a way as to prevent loss or theft as follows:

(a) Ammunition equal to one day's estimated sales may be displayed in a locked showcase or security case or fixture. If possible, empty boxes will be displayed in the showcases and sales will be made from reserve stock.

(b) Gun and ammunition fixtures will be locked except when merchandise is presented to the customer for inspection.

4-8. Contract guard weapons and ammunition

a. Protection of contract guard weapons and ammunition not U.S. Government property is the responsibility of the contractor. If granted permission by the installation commander to store on military reservations, these items will be provided the same degree of protection against loss or theft as Army weapons and ammunition will be stored in arms storage facilities meeting the requirements of this regulation. In addition these weapons and ammunition will be accounted for at all times. These weapons and ammunition are not authorized to be stored in AA&E storage facilities containing Government weapons and ammunition.

b. Commanders will prescribe the specific accountability procedures for contract guard weapons and ammunition.

4-9. General officer weapons and ammunition

Small arms and ammunition issued to general officers are exempt from all provisions of this regulation except loss and investigations requirements. The items will be stored in a manner deemed appropriate by the general officer.

4-10. U.S. Military Academy weapons

U.S. Military Academy (USMA) weapons issued to each cadet are granted an exception to the storage security requirement in this chapter. The Superintendent, USMA, will set up proper security for cadet weapons to ensure weapons are safeguarded at all times.

4-11. Demilitarized weapons

Demilitarized weapons, although not classified as sensitive, will be secured as commanders may direct.

4-12. Foreign weapons and ammunition

a. Arms and ammunition of foreign origin in custody of the Army for intelligence, research, development, test, evaluation, or other purposes, will be controlled and safeguarded in the same way as that prescribed for U.S. military weapons and ammunition.

b. Provisions of AR 700-99, chapter 2, apply to captured enemy weapons and ammunition.

4-13. Museums Arms and Ammunition

a. *General.*

(1) Arms, 19th century or older and not requiring metallic cartridges are classified as museum artifacts and are excluded from the physical security requirements for storage of arms. Security requirements for these artifacts will be determined per AR 190-51, appendix B.

(2) All operable and inoperable arms not on display will be secured according to this regulation.

(3) Live ammunition will not be used for museum displays. Display ammunition, arming pins, caps, or other detonating devices will be rendered temporarily inoperable.

b. *Transportation.* Museum weapons in transit will be protected according to this regulation.

c. *Arms storage facilities.* The provisions of this regulation apply for the storage of museums arms and ammunition.

d. *Arms on display.*

(1) Ready-to-fire weapons containing self-primed metallic cartridges will be modified to make them temporarily inoperable. Removal of firing pins, internal mechanisms, or parts will satisfy this requirement; however, parts must be secured against pilferage. Modifications will not detract from the display value of the item. Under no conditions will any weapon be permanently altered by welding or cutting without written approval of the Chief of Military History.

(2) Weapons on display in exhibit or display cases will be secured to prevent their easy removal. Security measures will be as inconspicuous as possible so as not to detract from the aesthetic appearance of the display.

(3) Classified component parts will be removed before any non-nuclear missiles, rockets, or other AA&E are displayed.

e. *Accountability.* All museum weapons are subject to the following requirements:

(1) A current inventory by serial number will be maintained.

(2) All weapons, with or without serial numbers will be marked with a catalog number. Numbers should be easy to find, legible, and placed on the weapon in a position where they do not interfere with the display or study value of the weapon.

(3) Commanders should consider photographing unique museum items as an identification aid in case of theft. Color photographs often preserve a more complete and accurate record than black and white photographs. Negatives should be kept separate from the original photographs.

(4) A serial or catalog number list of weapons stored in banded or sealed containers will be fastened to the outside of each container. The contents will be authenticated with the signature of the

curator or other responsible person. Banded containers will be examined quarterly for tampering and their contents inventoried annually. When seals are used, they will be controlled as stated in AR 190–51, appendix E.

(5) All museum weapons will be visibly inventoried, except weapons stored in banded containers as follows:

(a) Museum personnel will inventory weapons by physical count weekly, and serial or catalog number quarterly.

(b) A disinterested officer will conduct a semiannual inventory of all weapons except those stored in banded containers. The results of this inventory will be kept for 1 year.

(6) Inventory records will be kept on DA Form 2609 (Historical Property Catalog) according to AR 870–20, chapter 4. Inventory files will be maintained for at least 1 year.

f. Small Arms Serialization Program. All weapons with serial numbers will be registered with the DOD Central Registry according to AR 710–3, paragraph 4–11. A manual recording system should be used for those weapons that the Small Arms Serialization Program will not accept because they are foreign, have nonnumeric serial numbers, and so forth.

g. Missing or recovered museum weapons. Procedures for reporting missing or recovered weapons are contained in this regulation.

4–14. Arms parts

Major parts for arms, such as barrels and major subassemblies, will be afforded at least the same protection as Category IV arms. The frame or receiver of an arm constitutes a weapon and such parts, therefore, must be stored according to the correct category; for example, the receiver of a .30 caliber machine gun will be stored as a Category II weapon.

4–15. Restricted area posting

Areas where arms are stored will be designated and posted as restricted areas according to AR 190–13, paragraph 6–4. Posting will be visible at eye level when possible. It will include fire control measures, when required. In the areas where a predominant minority language is spoken and clear justification exists, local commanders may specify multilingual posting. In overseas commands where posting is authorized, areas will be posted in English and the host country language. International sign decals are contained in Military Specification MIL–M–43994A.

4–16. IDS signs

Arms storage facilities having IDS will have signs prominently displayed announcing the presence of IDS (see app F). They will be affixed at eye level, when possible, on the exterior of each interior wall that contains an entrance to the arms storage room, vault, or building. They will be affixed on exterior walls only when the exterior wall contains an entrance to the arms storage facility.

4–17. Fences

Arms storage buildings, bulk storage areas, and outside areas where vehicles and aircraft are routinely parked with weapons aboard may be surrounded with fencing when determined necessary by the commander concerned. Such determination will be made based on an assessment of local threats, vulnerabilities, and cost effectiveness. Fencing construction criteria is prescribed in paragraph 5–3.

4–18. Security of tools and high-value items

a. Tools such as hammers, bolt cutters, chisels, crowbars, hacksaws, cutting torches, and similar items which could be used to assist in gaining unauthorized access to an arms storage facility must not be readily accessible to intruders. Tools of this type should be removed from the vicinity of the arms storage facility or room. When an arms storage facility is the only security location available, such tools will be stored in a locked container within the facility. When the access door to an arms storage room is located within the unit supply room, tools will not be stored in the supply room.

b. When other secure storage facilities are reasonably available high-value items will not be stored in arms storage facilities. Such items include field glasses, compasses, watches, and highly valuable

items subject to pilferage. In the absence of secure facilities, commanders may authorize (in writing) those sensitive items to be stored in arms storage facilities. Commanders are cautioned, however that each additional item of value stored in a weapons storage area increases the target potential to criminals.

4–19. Access control

a. Routine or unaccompanied access by enlisted and civilian personnel to arms storage facilities will be limited to the least practical number of responsible persons designated by the unit commander. The names and duty positions of these persons will be posted inside the arms room. These persons will be authorized unaccompanied access to the arms storage facilities only after they have satisfactorily undergone a command-developed background check that has been verified by a review of personnel records. (See para 2–12.) Unit officer personnel, with the unit commander's approval, should be permitted routine unaccompanied access. However, those officers authorized unaccompanied access will be designated in writing by the commander. The list will be posted as above.

b. In addition to the requirements in (a) above, a two-person rule may be established for access to arms storage facilities. At the option of the commander concerned, two authorized persons may be required to be present during any operation which affords access to these facilities. If the two-person rule is used, commanders should establish appropriate lock and key control procedures to preclude defeat of the two-person rule concept.

4–20. Security of Class 5 storage containers

a. Class 5 security containers authorized for use instead of arms rooms must be adequately protected. The following factors must be considered for each container:

(1) Its vulnerability when left unattended for extended periods of time.

(2) Vulnerability of the location where the container is placed.

(3) Accessibility and ease of removal of the container.

(4) The position where the container will be least vulnerable to unauthorized access by heavy lifting equipment (e.g., forklifts, dollies).

(5) The position from which unauthorized persons would find it extremely difficult to remove the container.

b. Positive overall security of the arms stored in the container will be achieved. Commanders will ensure that structure protection provided by the storage container is adequately increased by the physical security measures specified in this regulation.

4–21. Arming of unit arms rooms armorers

Depending on the local threat, environment, and location of unit arms rooms, (or other arms storage facilities), commanders concerned will determine the need to arm unit armorers (or other on duty personnel) during the performance of their duties to prevent the possible armed robbery or forcible theft of weapons and ammunition. If such personnel are armed, provisions of AR 190–14, paragraphs 2–2, 4–1, and 4–4, apply.

Chapter 5 Protection of Nonnuclear Missiles, Rockets, Ammunition and Explosives

5–1. General

Nonnuclear missiles, rockets, ammunition, and explosives listed in appendix B will be protected in accordance with this chapter. Individuals issued or in possession of missiles, rockets, ammunition, or explosives are responsible for security of such property while it is charged or entrusted to their care. All unused ammunition and explosives will be turned in to the proper authority per AR 710–2, paragraph 2–52. Ammunition and explosives deployed in the field for training or operational purposes will be protected at all times as prescribed in paragraph 2–5. Missiles, rockets, ammunition, and explosive items installed in vehicles and aircraft are considered in

use and will be protected as part of the overall system in which they are installed. Other criteria in this chapter does not apply to such missiles, rockets, ammunition, and explosive items. Commanders will ensure that necessary security measures are taken to protect ammunition and explosives stored in vehicles and aircraft as prescribed in paragraphs 5-3 and 5-4. (See app H for AA&E physical security standards at contractor facilities).

5-2. Bulk storage areas

a. Category I and Category II.

(1) *Bulk storage.* Bulk storage areas are considered to be depot activities, prestock points, and ammunition supply points at which bulk quantities of missiles, rockets, ammunition, and explosives are stored. Storage is usually in original containers. Storage structures acceptable for storage of Category I and II ammunition and explosives are those earth-covered magazines and igloos listed AR 385-64, paragraphs 1 through 12 and appendix A. Commanders may permit storage of missiles, rockets, ammunition, or explosives in other types of structures that provide the necessary delay time equivalent to earth covered magazines and igloos and if all other requirements of AR 385-64 are met.

(2) Supplemental controls.

(a) *IDS.* Category I and II storage facilities and structures will be protected by IDS. Facilities without an operational IDS will have armed guards posted 24 hours a day to maintain constant, unobstructed observation of the storage structures, prevent any unauthorized access to the protected structure, make known any unauthorized access to the structure.

(b) *Security patrols.* Storage facilities and structures will be checked by a security patrol periodically as dictated by any threat and by the vulnerability of the facility. Checks will be conducted on an irregular basis during nonduty hours. For Category I and II facilities protected by an operational IDS, the intervals between checks will be once every 2 hours. For facilities without an operational IDS, the intervals between checks will be hourly for Category I and once every two hours for Category II facilities.

b. Category III and IV

(1) *Bulk Storage.* Ammunition and explosives listed under Category III and IV will be stored in structures that meet the criteria in appendix G, or in structures which provide delay time which meets or exceeds that criteria as certified by qualified engineer personnel.

(2) *IDS.* IDS is optional for Category III and IV facilities and structures. New IDS will not be programmed for Category III and IV facilities (structures) unless it is determined necessary based on an assessment of the local threats, vulnerabilities, and cost effectiveness.

(3) *Security patrols.* Storage facilities and structures will be checked by a security patrol periodically as dictated by any threat and by the vulnerability of the facility. For Category III and IV facilities protected by an operational IDS, the intervals between checks will be 72 hours and once every 48 hours for facilities not protected by an operational IDS.

(4) *Inert and expended launcher tubes, inert mines, and inert rocket launcher training devices, and practice rockets are vulnerable to pilferage, misuse, or possible conversion to live ammunition. Such items will be clearly marked according to AR 385-65, paragraph 4, to prevent accidental turn-in, or turn-in as live fire residue. Those items that can be converted to operable weapons will be accounted for and secured as Category IV live ammunition and explosives.*

c. Rescinded.

5-3. Fences

a. Categories I and II missile, rocket, ammunition, and explosive storage areas will be surrounded with security fencing constructed and configured as set forth below. New chain link fencing will not be programmed for Category III and IV storage facilities unless it is determined necessary based on an assessment of local threats, vulnerabilities, and cost effectiveness. COE drawing STD 40-16-08 depicts chain link fence construction standards.

b. Fence fabric will be of chain link (galvanized, aluminized, or plastic coated woven steel) 2-inch square mesh 9-gauge diameter wire, including coating. In Europe, fencing may be North Atlantic Treaty Organization (NATO) Standard Designed Fencing (2.5-3mm gauge, 76mm grid opening, 2 meter height, and 3.76 meter post separation).

c. Posts, bracing's, and other structural members will be located on the inside of the fence fabric. Galvanized steel or aluminum tie-wires equal in gauge to fencing will be used to secure the fence fabric to posts and other structural members.

d. The minimum height of the fence fabric will be 6 feet without an outrigger (COE drawing STD 40-16-08, Type FE-5).

e. The bottom of the fence fabric will extend to within 2 inches of firm ground. Surfaces will be stabilized in areas where loose sand, shifting soils, or surface waters may cause erosion and thereby assist an intruder in penetrating the area. Where surface stabilization is not possible, or is impracticable, concrete curbs, sills, or other similar type anchoring devices, extending below ground level will be provided.

f. Modifications to chain link fencing will not be made to conform to the requirements of this paragraph if the existing fencing provides an equivalent or greater penetration resistance, as determined by the commander concerned.

g. The barrier will have a minimum number of vehicular and pedestrian gates, consistent with the operational requirements. These gates will be structurally comparable, provide penetration resistance equivalent to the adjacent fence, and be designed so that the traffic through them will be under the positive control of the security force. Unless manned 24 hours a day, gates will be provided with an approved lock. Hinge pins and hardware will be welded or otherwise modified to prevent easy removal.

h. Drainage structures and water passages penetrating the barrier be barred to provide penetration resistance equivalent to the fence itself. Openings to the drainage structures having a cross-sectional area greater than 96 square inches, and a smallest dimension greater than 6 inches will be protected by securely fastened welded bar grills. As an alternative, drainage structures may be constructed of multiple pipes, each pipe having a diameter of 10 inches or less, joined to each other and to the drainage culvert. Multiple pipes of this diameter may also be placed and secured in the "in-flow" end of the drainage culvert to prevent intrusion into the area.

i. Building walls may be incorporated into the barrier system if they provide penetration resistance equivalent to the perimeter barrier and are subject to observation.

j. If practicable, clear zones will extend 12 feet on the outside and 30 feet on the inside of the perimeter fence. Clear zones for Categories I and II AA&E will be free of all obstacles, topographical features, and vegetation exceeding 8 inches in height which reduce the effectiveness of the physical barrier, impede observation, or provide cover and concealment of an intruder. Clear zones for Categories III and IV AA&E will be free of obstacles, topographical features, and vegetation which reduce the effectiveness of the physical barrier.

(1) Vegetation or topographical features which must be retained in clear zones for erosion control, passive defense, or for legal reasons will be trimmed or pruned to eliminate concealment and checked by security patrols at irregular intervals.

(2) Perimeter light poles, fire hydrants, steam pipes, or other similar objects; barricades for explosives safety purposes; and entry control buildings within the clear zone that represent no aid to circumvent the perimeter barrier or do not provide concealment to an intruder do not violate the requirements of clear zones.

k. Fencing needs will be evaluated and determined for each installation on a case-by-case basis. The installation of new security fencing around an outer perimeter may not be cost effective. The following will be considered:

(1) If the storage area perimeter has adequate security fencing, fencing of inner zones may not be required.

(2) If the storage area outer perimeter has barbed wire fencing or no fencing, security fencing of inner zone storage areas may be more practical and cost effective.

(3) If the storage area outer perimeter is partially fenced, it may be more cost effective to complete the loop rather than to install fencing around inner zone storage areas.

(4) If natural barriers, such as mountains, cliffs, rivers, seas, or other difficult-to-traverse terrain, form portions of the perimeter and provide equivalent or more security than fencing, security fencing of inner zone storage areas may not be required.

5-4. Security lighting

a. Security lighting will be provided for Category I and II storage facilities. New security lighting systems will not be programmed for Category III and IV facilities unless determined necessary based on an assessment of the local threats and vulnerabilities. Security lighting requirements will conform to ammunition and safety requirements per AR 385-64, paragraphs 1 through 12 and appendix A. However, existing security lighting for Category III and IV storage facilities will not be removed solely to comply with this paragraph. Security lighting will—

(1) Be provided for exterior doors of all Category I and II items storage rooms and magazines.

(2) Have switches for exterior lights installed so that they are not accessible to unauthorized individuals.

(3) Have all exterior lights covered with wire mesh screen that will prevent their being broken by thrown objects. Vandal resistant lenses may be used instead of wire mesh screen.

(4) Be provided for motor pools, hangars, and outdoor parking areas for vehicles and aircraft that have Category I and II ammunition and explosives stored on board, and for such items located in open storage areas.

(5) Be provided along storage site perimeter barriers determined necessary by the Commander. Commanders will determine perimeter lighting needs depending on the threat, perimeter extremities, and surveillance capabilities.

b. Field manual (FM) 19-30, chapter 6, will be used as a guide in deciding lighting descriptions, layouts, lighting patterns, and minimum protective lighting intensities and requirements. COE drawing STD 40-04-08 depicts a typical design for a conventional ammunition storage area security lighting system.

c. Emergency lighting and standby power are not required, but will be considered when the threat and vulnerability warrant.

5-5. Guard protection and surveillance

Protection and surveillance by guards or other personnel together with other physical security measures will be established for facilities or temporary open storage areas as set forth in this regulation and otherwise as needed to ensure protection at the facilities. At a minimum, entrance and exit points into magazine and holding areas where vehicles, railcars or aircraft with missiles, rockets, ammunition or explosives aboard are parked, will be controlled by guards or other personnel. When duty personnel are not present or IDS or closed circuit television are not used, enough security patrols will be provided to allow physical inspection of each aircraft, railcar, or vehicle at a frequency determined by the commander concerned, based on the category of AA&E, the threat, and the location.

5-6. Locks and keys

a. *Locks.* A class 5 steel vault door with a built-in, 3-position, dial-type, changeable combination lock or a key operated high security padlock and hasp will be used on doors to structures housing classified material per AR 380-5, chapter 5. Otherwise, each ammunition magazine or room constructed in accordance with chapter 4 will be secured with an approved high security padlock and high security hasp. Storage facility hasps and locking hardware will provide comparable protection to that afforded by the locks approved or other high security locking hardware. See the consolidated glossary, for list of approved DA locks and hasps. Facilities in which aircraft or vehicles are stored with ammunition aboard will be secured with an approved security padlock. See paragraph 3-8, for further guidance.

b. *Key and lock control.* Key and lock control will be established

in accordance with paragraph 3-8. Use of master key system or multiple key system is prohibited.

c. Category I Storage Facilities.

(1) Doors used for access to Category I storage facilities will be locked with a high security padlock and hasp and one secondary padlock (medium or low security).

(2) Access to, or possession of, both keys to Category I storage facilities by one person is prohibited. A key control system will be established so that no one will be allowed to interchange access to keys to installed "A"/"B" locks.

(3) Key control officers and locksmiths will not be authorized access to information concerning the specific locations of installed locks protecting Category I structures at the site (for example, specific storage igloos within a site).

(4) Keys and locks subject to the two person rule will not be placed in use at the facility by the key control officer. Such keys and locks will be placed in use by the respective key control custodians. Additionally, the key control officer is not authorized access to such keys while the locks are in use under the two person rule.

(5) The rotation of padlocks will not be required when two locks are installed on each Category I structure and a system is set up for separating these locks into "A" and "B" locks. Personnel will be identified and authorized access only to either "A" or "B" keys or locks, but not both. The system will preclude an individual from interchanging access to the "A" and "B" keys.

5-7. Communications

Reliable and efficient primary and backup means of external and internal communications, at least one of which is radio, will be established at magazine areas to permit notification of emergency conditions. The communication system will be easily accessible to guard and security personnel on their posts and will be tested daily by supervisory security personnel. The backup system will be of a mode other than that of the primary communication system. Both primary and backup guard (security) communications will be tested at least once during each shift.

5-8. Protection of missiles, rockets, ammunition, and explosives at unit level

a. Unit level stocks are those stored in basic load quantities (quantities stored in tactical configuration for readiness and emergency purposes) or which are on hand for operational and training purposes.

b. A typical facility for storage of operational quantities of ammunition would be a building used to store ammunition on a rifle range or a military police or guard (security) arms room. Such facilities will comply with the requirements for unit arms rooms, paragraph 4-2 or paragraph 5-2, for bulk ammunition storage magazines.

c. The following are minimum requirements for safeguarding and maintaining unit level stocks:

(1) Depending upon tactical and contingency considerations, unit level stocks will be stored in ammunition storage rooms or magazines that are equivalent to the structural standards prescribed in paragraph 5-2.

(a) Commanders may authorize in writing the storage of small quantities of ammunition in unit arms storage rooms. The authorization will be posted in the arms room. Storage will be consistent with operational requirements. Ammunition authorized for storage in unit arms storage rooms will be stored in containers. Ammunition will be secured in banded crates, or in approved metal containers, or cabinets that are approved standard issue, commercial, or approved locally fabricated. Approved standard issue metal wall lockers may be used. Security containers (GSA approved class 5) not storing or containing classified documents or material may also be used. Crates will be banded or sealed, in a way that will prevent ammunition removal without leaving visible signs of tampering. Ammunition stored in metal containers, or cabinets, will be secured with secondary padlocks. Screws and bolts used in assembling containers, lockers, or cabinets, will be made secure to prevent disassembly. Containers weighing less than 500 pounds will be fastened to the

structure (or fastened together in groups totaling more than 500 pounds) with bolts or chains equipped with secondary padlocks.

(b) Commanders will establish security procedures for issue of basic load ammunition that will enable the unit to achieve its combat or contingency missions. When tactical, operational, or readiness conditions permit, basic load ammunition will be stored in ammunition storage rooms or magazines that are equivalent to the structural standards prescribed for the risk category of the items.

(c) For safety reasons, live ammunition will not be left in weapons magazines stored in the arms room.

(2) When operational and training requirements preclude storage of unit level stocks or explosives in ammunition storage magazines, these stocks may be stored in or on combat vehicles, aircraft, ships, or trailers, or in other configurations required by the operational environment. When stored in this manner, unit level stock storage areas will comply with criteria specified by the MACOM.

(3) Ammunition and explosives may be stored aboard vehicles or aircraft provided the vehicle or aircraft is located inside a motor pool or park or aircraft park area. When stored in this configuration, supplemental security measures in AR 190-51, paragraphs 3-3 and 3-5, apply.

(4) Vehicles or aircraft with missiles and rockets in a ready-to-fire configuration will be provided 24 hour armed guard surveillance.

(5) Ammunition and explosives in open storage (such as vehicle holding area, ammunition supply point, and aircraft cargo area) are especially vulnerable to theft or sabotage. Commanders will prescribe necessary security measures to protect items located in open storage. Ammunition and explosives in temporary open storage will be secured under the following procedures:

(a) Perimeter barrier, either temporary or permanent.

(b) Guard surveillance (post guards or on duty personnel).

(c) Security lighting during hours of darkness or reduced visibility.

(d) Inventory, accountability, and control.

(e) Posted restricted limited area.

(f) Access control (see para 5-9).

(g) Communication systems.

(6) When more than one unit uses the same area, stocks will be separated and identified by unit. One unit will be designated as responsible for the security of the entire area, including access control.

(7) When the threat or other conditions dictate, responsible commanders will decide the advisability of separate storage of battery coolant units (BCU) from the REDEYE weapon. Threat conditions, operational requirements for BCU, and other mission criteria are factors that will determine container location.

d. The following are additional minimum requirements for safeguarding and maintaining Category I missiles at deployment Ammunition Holding Areas (AHA) and at unit areas:

(1) Unit level stocks of Category I missiles will be stored in ammunition storage rooms or magazines equivalent to the structural standards prescribed in paragraph 5-2.

(2) Vehicles or aircraft storing Category I missiles will be provided 24 hour armed guards to maintain constant, unobstructed observation of the vehicle or aircraft. When stored in this configuration, supplemental security measures in AR 190-51, paragraphs 3-3E(3) and 3-5E(8) also apply.

(3) Category I missiles will not be stored in open storage (for example, vehicle holding areas, aircraft cargo holding areas, ammunition supply points, AHAs). Category I missiles at these locations will be secured as follows:

(a) Placed in approved containers (MILVAN, SEAVAN, or CONEX), or in a totally enclosed storage structure. The doors will be secured with two approved medium security or low security locks. Key and lock controls in paragraph 5-6c apply.

(b) The Category I storage area will be provided 24 hour constant armed guard surveillance.

(c) The two person rule will apply for access to Category I missiles at these locations.

5-9. Entry control

a. Vehicular and personnel gates will be secured and strict key control accountability will be observed. A pass, badge, or access roster plus a registration system, will be used to admit properly identified authorized personnel to storage areas.

(1) Vehicle and personnel gates will be secured except when it is necessary to allow authorized entry into or exit from, the area.

(2) Keys and locks to gates will be controlled and accounted for per paragraph 3-8.

(3) Entry and exit procedures will include checks of personnel and vehicles for unauthorized material.

(4) Persons requiring frequent recurring entrance to the area will either be listed on an entry control roster prepared by the responsible storage commander or issued a photographic security badge which clearly establishes the authority to enter. The roster will contain as a minimum, the name, grade, and unit or organization of each authorized person.

(5) Privately-owned vehicles and leased vehicles will not be permitted inside storage facilities and areas. Government vehicles, and vehicles operated by DOD contract personnel on official business are authorized entry.

(6) Upon exiting, all vehicles will be thoroughly inspected to ensure that only authorized material is being removed.

(7) Vehicles leased by Government agencies are considered to be Government vehicles for the contracted period. Rental vehicles obtained by Government employees for official use during periods of temporary duty will be allowed entry when the employee's official duties require such entry.

b. Personnel, including guards or host country guards, whose duties require unescorted access to storage facilities containing classified missiles and rockets, or other classified items, will have a security clearance commensurate with the classification of the items involved.

c. A two-person rule will be established for access to storage facilities containing Category I missiles and rockets. No one individual can have access.

5-10. Restricted areas

Areas in which sensitive missiles, rockets, explosive, or ammunition are stored will be designated and posted as restricted areas per AR 190-13, chapter 6.

5-11. IDS signs

Signs clearly announcing the presence of an IDS will be displayed on ammunition storage rooms, magazines, or perimeter barriers using such a system. Signs will be affixed at eye level, when possible. They will be affixed on the exterior walls containing an entrance to the ammunition or explosives storage room, vault, building, or magazine or, in the case of alarmed barrier fences, on the outside of the fence at about 100-meter intervals. Signs will be placed at a location where they will not hinder observation or fields of fire. Signs will not be placed where they may be used by intruders to gain entry. Alarm signs will not create nuisance alarms. Otherwise, the signs will be posted outside the perimeter fence. IDS signs meeting the specifications of appendix F will be used.

5-12. Storage of classified items

Classified AA&E storage facilities will comply with standards set forth in paragraph 4-2 or AR 380-5, appendix H. Classified missiles and rockets, or other classified items, will be segregated from unclassified items stored in the same storage facility. Strict access and accountability control procedures will be established by the commander. See paragraph 5-9 for two-person rule requirement for access to Category I missiles and rockets. Personnel whose duties require access to above storage facilities will have a security clearance commensurate with the classification of the items involved. Classified AA&E material manuals and documents should normally

be stored separately from the ordnance items per AR 380–5, paragraph 5–102.

5–13. Additional security measures for igloos and magazines

Additional security measures may be used to enhance overall security of ammunition and explosives stored in unalarmed igloos and magazines or to increase the delay time of alarmed igloos and magazines.

a. King Tut blocks may be placed in front of igloo or magazine doors to increase the difficulty and the delay time associated with opening them after locks have been defeated.

b. Expanded metal cages may be placed in front of igloo or magazine doors to provide an additional barrier to entry. Where the igloo or magazine is to have an IDS, sensors may be placed on the cage to provide detection prior to the aggressor reaching the door.

Chapter 6 Accountability, Disposition, Disposal, and Demilitarization

6–1. Nonnuclear missiles and rockets (Category I)

a. Each Commander having custody of nonnuclear missiles and rockets establish and maintain records which will provide for continuous accountability. This will include those issued for training by requiring the return of unexpended missiles and expended residue. When possible, such records will be maintained by serial number. Incoming shipments will be inventoried promptly after receipt to ensure that all items have been received. All contracts for the procurement of nonnuclear missiles and rockets will provide for individual serialization.

b. In addition to the inventory requirements in AR 740–26, chapter 2, and AR 710–2, paragraphs 2–12, 2–53, and 3–43, the following apply:

(1) Unit level. A 100 percent physical count will be taken monthly. A 100 percent physical inventory by serial number will be taken quarterly.

(2) Depot, post, or base level. A 100 percent inventory will be taken semiannually.

6–2. Arms

a. *Arms Serial Number Registration and Reporting.*

(1) *DOD Central Registry.* A DOD Central Registry will be maintained to record, by serial number, the ownership account of all arms. AR 710–3, chapter 4, establishes policies and prescribes responsibilities and procedures for serial number registration and reporting of arms belonging to Army units, organizations, activities, and installations which maintain property books and stock record accounts. MACOMs will emphasize the necessity for strict compliance with the prescribed reporting requirements. Questions concerning registry operations will be referred to the DOD Central Registry at: Commander, U.S. Army Armament, Munitions and Chemical Command, ATTN: AMSMC–MMD–LW, Rock Island, Illinois 61299–6000. DSN 793–4678/4977/6519 or commercial (309) 782–4678/4977/6519.

(2) *Delineation of responsibilities.*

(a) The Department of the Army is the assigned agency responsible for operating and maintaining the DOD Central Registry. This registry maintains control over serial numbers of arms and a file of those arms that have been lost, stolen, demilitarized, or shipped outside the DOD. The DOD Central Registry will be updated by tapes, forwarded to it monthly from the MACOM registries which contain in serial sequence the most recent list of serial numbers of arms for which the MACOM maintains accountability. The tape will also include a history file of arms reported lost, stolen, demilitarized, or shipped outside the control of the DOD.

(b) Each MACOM is responsible for maintaining a mechanized registry for serial numbers of arms in their inventory. The registry

will be updated based on transaction reporting, i.e., receipts, issues, and turn ins.

(c) When the DOD Central Registry receives an inquiry concerning a lost, stolen, or recovered weapon that is listed with the registry as DOD property, or as missing from a DOD activity, the Central Registry will inform the affected MACOM registry. Commanders will establish procedures to ensure that such losses, thefts, or recoveries are, or have been, appropriately investigated per paragraph 2–9, and reported as outlined in chapter 8 of this regulation. Commanders will also ensure that MACOM AA&E recovered by police or investigative agencies are returned to MACOM control for disposition upon completion of investigative and prosecutive action.

(3) *Exclusions.* Privately-owned arms and arms purchased with nonappropriated funds are exempt from being reported to the DOD Central Registry. However, each post, camp, or station having nonappropriated fund arms will establish procedures to identify such weapons by type and serial number.

(4) *Registration and reporting procedures.*

(a) The arms serial number registration and reporting procedures will ensure control over all arms serial numbers in the following situations: from the manufacturers to depot; in storage; in transit to requisitioners; in post, camp, or station custody; in the hands of users during turn-ins; in renovation; and during disposal or demilitarization.

(b) The DOD Central Registry will maintain records of: serial number adjustments; shipments to flag rank officers; foreign military sales (FMS) and grant aid; activities outside the control of the Department of Defense; and transfers between DOD components. Incoming shipments will be inventoried promptly after receipt to ensure that all items have been received and entered into the DOD Central Registry or the MACOM registry, as appropriate.

(c) National or DOD Component–assigned stock numbers will be used by the MACOMs for the initial load and all later transactions to the DOD Central Registry.

(d) All arms, regardless of origin, that are accounted for in unclassified property records, will be reported. Automatic weapons will be reported on a priority basis.

(e) Arms with national stock numbers (NSN) or serial numbers, with missing, obliterated, mutilated, or illegible serial numbers, when discovered, will be reported to the DOD Central Registry by the MACOM registry, by message or letter for assignment of NSN and management control number serial number. Request must contain:

1. NSN or “None” if unknown.

2. Serial number or “None” if unknown.

3. Description, to include make, model, caliber, and any or other nomenclature data.

(f) When the DOD Central Registry identifies duplicate serial numbers by weapon type in the MACOMs, instructions will be provided by the U.S. Army Armament Munitions and Chemical Command (AMSMC–MMD–LW) for the modification of the serial numbers. Movement and shipment of weapons will not occur prior to correction of serial numbers.

(g) To ensure the DOD Central Registry is properly maintained, the following is required for small arms shipments: two weapon serial number (WSN) control cards for each weapon in shipment will be attached to the supply documentation; when operational procedures restrict compliance with the two WSN control card requirement, a listing of WSNs will be attached to the supply documentation; and incoming shipments will be opened by a designated receiver and the receipt of each item verified by check of the serial number. However, incoming shipments from new procurement received at depots that are preservation packaged need not be individually checked if the contract provides for a 100 percent serial certification by the contractor which is checked by government contract representatives based upon acceptable sampling techniques. In this latter case, the receiving activity randomly will sample to verify the accuracy of serial numbers in each shipment from new procurement.

(h) The DOD Component registries will reconcile inter-Service

transfers of weapons on a transaction-by-transaction basis. Follow-up procedures will be established to ensure that the loop is closed on inter-Service transfers.

b. Physical inventory control.

(1) All items included in the definition of the term "arms" will be subjected to physical inventory control per AR 740-26, chapter 4. All provisions requiring a high degree of protection and inventory control specified for sensitive items, apply.

(2) Policy and procedures for physical inventory control are per AR 740-26, chapter 4.

(a) The nature and sensitivity of arms control dictates strict adherence to the provisions of AR 740-26, chapter 4, with respect to physical inventories, research of potential inventory adjustments, reversal of inventory adjustments, retention of accountable documentation, quality control, and inventory effectiveness reporting.

(b) The special provisions for controlled inventory items are important to the control of arms. In addition to AR 740-26, the following minimum requirements will be met—

1. *Unit level.* A 100 percent physical count will be taken monthly and an inventory by serial number will be taken quarterly, except for boxed and banded arms. In this latter case, the count and inventory will consist of a 100 percent count as reflected by the number of items listed on the boxes. Any evidence of tampering will be cause for that box to be opened and 100 percent count to be taken of the weapons in the box. The inventory records will be maintained for a minimum of 2 years for inventories that do not reflect discrepancies. Records of inventories that reflect discrepancies will be maintained for a minimum of 4 years.

2. *Depot, post or base level.* Those arms not already entered into the DOD Central Registry will be completely inventoried in conjunction with the serialization reporting program. Therefore, the inventory will be taken once each FY at depot and semiannually at post or base level. These inventories will consist of a 100 percent count as reflected by the number of items listed on the boxes. A complete count will be made of the contents of every box that is opened or damaged. The inventory records will be maintained as required in 1 above.

6-3. Ammunition and explosives

a. All items included in the definition of the terms "Ammunition" and "Explosives" will be subject to physical inventory control procedures per AR 740-26, chapter 4, and AR 710-2, paragraphs 2-12, 2-53 and 3-43. All provisions of AR 740-26, chapter 4, and AR 710-2, chapter 2, requiring a high degree of protection and inventory control specified for sensitive items, apply. Upon receipt a check will be made to verify that all items shipped have been received.

b. Detailed policy and procedures for physical and inventory control of ammunition and explosives are per AR 740-26, chapter 4, and AR 710-2, chapter 2. The nature and sensitivity of ammunition control dictates strict adherence to all provisions with respect to the following:

- (1) Physical inventories.
- (2) Research of potential inventory adjustments.
- (3) Reversal of inventory adjustments.
- (4) Retention of accountable documentation.
- (5) Quality control.

(6) Inventory effectiveness reporting. The special provisions for controlled inventory items are important in the control of ammunition and explosives.

6-4. Inventory losses

Accounting and inventory losses of AA&E will be processed per AR 735-5, chapter 13, as applicable.

6-5. Inventory effectiveness review

Inventory effectiveness reviews will be conducted by the MACOM concerned on an unannounced basis.

6-6. Disposal and demilitarization

Disposal of all excess and surplus arms, arm parts, ammunition, and explosives is governed by the provisions of DOD 4160.21-M-1 and the demilitarization of AA&E shall be accomplished in accordance with the aforementioned DOD instruction. AA&E undergoing demilitarization must be transported and stored in accordance with this regulation until demilitarization is completed. AA&E being disposed of without demilitarization (FMS, transfer to law enforcement agencies, and the like) will be transported and stored in accordance with this regulation until accountability is transferred. The following applies:

a. *Arms.* A report (transaction) by serial number will be made to the DOD Central Registry upon the demilitarization of each arm that has been previously entered into the DOD central registry.

(1) A report (transaction) will be furnished to the DOD Central Registry in the case of each arm disposed of other than by demilitarization.

(2) A demilitarization certificate will be completed by a technically qualified U.S. Government representative before residue from the demilitarization process is released from U.S. control.

b. *Ammunition.* Defense Reutilization Marketing Offices (DRMO) are not permitted to receive live ammunition items. DRMO may receive inert ammunition components.

(1) In the United States, ammunition will be demilitarized by a DOD Component activity having such a capability.

(2) Overseas, where U.S. forces do not have the capability to demilitarize ammunition items, demilitarization may be performed by approved contractors who are licensed or controlled by the government of the country in which the contractor operates.

(3) The Military Departments are responsible for the economical and effective demilitarization of ammunition under their accountability. A certificate will be executed by a technically qualified U.S. Government representative for all items demilitarized. (DOD 4160.21-M-1, chapter 2)

c. *Explosives.* In addition to the requirements above, sales of surplus explosives in the United States are limited to individuals and companies holding a valid user's or dealer's license issued by the Bureau of Alcohol, Tobacco and Firearms, U.S. Department of the Treasury. Overseas sales are limited to companies controlled or licensed by the respective government. Purchasers of explosives must provide a Certificate Regarding End Use of Explosive Materials. (DOD 4160.21-M, chapter 2) Each MACOM will establish procedures to ensure that accountability of items shipped to DRMOs are retained until documents from the DRMO and the transaction records are reconciled.

6-7. Disposal of abandoned and confiscated privately-owned firearms

The Anniston Army Depot, ATTN: SDSAN-DSP-PPC, Anniston, Alabama 36201, is the continental United States (CONUS) disposal facility for shipping abandoned and confiscated privately-owned firearms. The following procedures apply:

a. Prior to shipment, register firearms in the DOD Central Registry per TM 38-214.

b. Use DD Form 1348-1 (DOD Single Line Item Release/Receipt Document) to accomplish supply turn-in transactions with Anniston Army Depot.

c. Ship firearms via registered mail, return receipt requested.

d. Prior to shipment, clear firearms from provost marshal registry files.

Chapter 7 Transportation

7-1. General

This chapter prescribes transportation security standards and procedures to be used in safeguarding categorized AA&E as described in appendix B and for safeguarding uncategorized Class A and B ammunition and explosives. AA&E which are classified will be

stored and transported in accordance with this regulation and per AR 380-5, chapters 5 and 8; where specific individual requirements differ between these two documents, the more stringent requirement will be followed.

a. MACOMs will establish security criteria for the intra-installation and unit training movement of AA&E consistent with the philosophy in this chapter.

b. Explosive ordnance disposal teams responding to off-station accidents or incidents will transport necessary explosive ingredients in accordance with requirements established by the MACOM concerned, based on the philosophy contained in this chapter.

c. Commanders will ensure that DOD-procured AA&E items transported from contractor facilities to DOD facilities are shipped in accordance with this chapter. Provisions of AR 55-355, chapter 33, apply concerning shipments of DOD-procured AA&E from contractor facilities to DOD facilities.

7-2. Responsibilities relating to transportation

a. Within their respective areas of responsibilities, overseas theater commanders, and the Commander, MTMC, are responsible for:

(1) Ensuring that the transportation protective measures used for AA&E items are established in applicable tariffs, government tenders, agreements or contracts.

(2) Negotiating with commercial carriers for establishment of transportation protective measures to meet shipper requirements.

(3) Determining the adequacy of the services provided by commercial carriers for movement of AA&E items.

(4) Routing when requested by shipper.

b. In addition, the Commander, MTMC, will—

(1) Develop, administer, and maintain joint transportation security procedures for the commercial movement of AA&E.

(2) Serve as the DOD focal point for security and performance monitoring and oversight relative to the security of AA&E in transit in the custody of commercial carriers.

c. The Military Airlift Command (MAC) is responsible for ensuring the adequacy of the services provided for movement of AA&E items by military airlift, worldwide, and by commercial airlift procured by MAC.

d. The Military Sealift Command (MSC) is responsible for ensuring the adequacy of the services provided by military and commercial ocean carriage for movement of AA&E items.

e. This chapter does not relieve accountable officers of their responsibility to safeguard and account for property.

7-3. Standards

The following transportation security policy and standards for AA&E by category, as set forth in appendix B, are required to adequately protect such items during shipment. Follow minimum security provisions for commercial transportation of AA&E per AR 55-355, chapter 33. On the basis of threat determination and evaluation of the movement itself, AA&E may be given additional protection, but not less than that required by the category assigned to the item.

a. Use of commercial transportation services outside of the CONUS will adhere as closely as practicable to requirements per AR 55-355, chapter 33.

b. Overseas MACOMs will prescribe necessary commercial transportation security requirements and coordinate such requirements with host nation authorities. When such services cannot be obtained, compensatory measures will be taken to achieve equivalent security standards. Additionally, compensatory measures will be taken when waivers or exceptions are used.

c. The following factors also will be considered:

(1) Every effort will be made to consolidate shipment into truckload (TL) or carload (CL) quantities. Less than truckload (LTL) shipments are considered more vulnerable to theft.

(2) Small arms repair technicians may travel to support facilities to effect on-site repairs instead of shipping of small arms for repair.

(3) When practical, arms and ammunition of the same caliber will not be shipped in the same container or conveyance.

(4) Where available, export and import shipments will be processed through military managed and operated air and ocean terminals.

(5) Shipments of arms and ammunition scheduled for demilitarization and retrograde shipments will receive the same protection as other shipments of AA&E.

(6) Missile rounds will be shipped separately from launch control equipment, when feasible.

(7) Security provided for AA&E at commercial and military terminals will conform to the standards set forth in appendixes C and D. The standards will be provided to the commercial carriers by MTMC. Follow minimum provisions for commercial transportation of AA&E contained in AR 55-355, chapter 33.

(8) When possible, strap cutters should not be attached to palletized unit loads of ammunition prior to arriving at ammunition storage areas. The strap cutters should be shipped separately from the palletized ammunition.

(9) Shipments must be checked immediately upon receipt to ensure that the seals are intact and for any signs of damage or tampering. If there are any such signs, there must be an immediate inventory to verify quantities received and to determine the extent of any damage or tampering on all Category I and II AA&E, and classified AA&E shipments. If the seals are intact, quantity verification must take place no later than the next working day. The requirement to check seals and verify quantities received includes shipments of all categories of sensitive or classified AA&E and uncategorized Class A and B ammunition and explosives.

(10) For rail shipments of Category I and II items, the carrier must advise the consignee immediately upon arrival of the shipment at the yard serving the consignee and/or immediately upon arrival at the consignee's activity.

(11) Uncategorized Class A and B ammunition and explosives shipped by all modes will be afforded the same protection as Categories III and IV, unless otherwise directed in writing by the military department service headquarters.

(12) Enhanced transportation security measures for use during terrorist threat conditions are set forth in appendix I.

(13) Provisions of AR 190-14, paragraph 3-3, apply to transportation of individual weapons aboard commercial aircraft.

(14) When weapons are required to accompany a unit movement by commercial transportation, the commander or person in charge of the unit movement will contact the provost marshal and transportation office concerned for technical advice and instructions relative to such shipments.

(15) Crew served weapons will not be left mounted or stowed inside vehicles during unit movement by commercial transportation. Such weapons will be shipped according to paragraph 7-19. When this requirement cannot be met due to unit contingency or operational readiness requirements, waivers may be requested (see para 2-4). Adequate compensatory security measures will be established. MACOMs concerned will coordinate such waiver requests with MTMC.

7-4. Special considerations for Category I items

a. In addition to minimum security standards prescribed in paragraph 7-19, shipments of Category I material by all modes shall provide a continuous audit trail from shipper to consignee with advance certification of serial numbers of individual items or certified items. Two-man certification is required; that is, each container must be checked by two responsible agents of the shipper, and sealed and locked in their presence before delivery to the carrier. This rule applies at transshipment points and terminals whenever the original shipment loses its original identity; for example, when two or more shipments are consolidated into another container for further movement or if repacking is required.

b. When moved by unit or organization transportation, Category I material will be placed in the custody of a commissioned officer, warrant officer, noncommissioned officer (E-5 and above or DOD civilian grade GS-5 or above). Shipments or movements will be under armed guard surveillance.

c. Overseas commands may use local national personnel for

armed guard surveillance when status of forces agreement prohibit arming of U.S. personnel.

7-5. Physical security standards for sensitive AA&E

Shipments (as defined in chapter 1) by motor vehicle, railcar, ship, and aircraft are outlined in paragraph 7-19. Follow minimum security provisions for transportation of AA&E per AR 55-355, chapter 34.

7-6. Special considerations for water shipments

a. Security of shipments must be an integral part of prestowage planning. Considerations include:

- (1) Segregation of cargo.
- (2) Cargo in locked and sealed containers.
- (3) SEAVAN and MILVANS stowed so doors are not accessible to stevedores or ship's crew.
- (4) Break bulk cargo stowed in following order or priority; lockers, refrigerator boxes or deep tanks that can be locked and sealed; bins that can be boxed solidly with plywood or other appropriate materials and stowed in the upper tween decks of the hatches immediately fore and aft of the ship's house.

b. Specific locations of classified and protected sensitive shipments, with any special considerations, will be indicated on the final stow plan and given to the responsible ship's officer.

c. Vessel movements of U.S.-owned AA&E to and from overseas locations and intra-theater movements are normally limited to MSC controlled vessels; or when the above are not available, U.S. flag vessels or MSC approved local national chartered vessels.

7-7. Consideration for air movements

See paragraph 7-19.

7-8. Special consideration for small quantity shipments

Small quantity shipments for the purposes of these provisions shall be shipments of 200 pounds or less, or in the case of small arms, 15 or less individual weapons per shipment.

a. *Registered mail.* Arms and missile components (excluding ammunition and explosives) may be sent by registered mail (return receipt requested) when the size and weight meet U.S. Postal Service requirements.

b. *DOD Constant Surveillance Service (CSS).* Small amounts of unclassified Category IV AA&E and uncategorized Class A and B ammunition and explosives may be transported using only DOD CSS when loaded in an authorized container and size, weight, and safety factors otherwise meet commercial carrier requirements.

7-9. Organic and unit movements

Organic movements will adhere as closely as possible to the commercial standards set forth in paragraph 7-19. Where military personnel are employed in Armed Guard Surveillance (AGS), either in connection with organic or unit moves, or in connection with commercial carrier moves, such personnel may be armed with an individual weapon other than a shotgun at the discretion of the local commander.

7-10. Commercial movements

Shipments to be transported by commercial carriers will be per AR 55-355, chapter 33, and as summarized in paragraph 7-19. Carrier employees will meet the requirements of paragraph 2-12.

7-11. Overseas in-theater movements

Outside continental United States (OCONUS) commanders, based on host nation requirements, the local threat situation and personnel staffing, will use discretion in providing adequate security in theater when transporting AA&E cargo. Transportation service outside of CONUS will adhere as closely as possible to the established requirements for CONUS shipments. When such service cannot be obtained, compensatory measures will be taken to achieve equivalent security standards.

7-12. Foreign military sales (FMS) shipments

a. DOD officials authorized to approve an FMS transaction that involves the delivery of sensitive U.S. AA&E to a foreign purchaser will, at the outset of negotiation or consideration of proposal, consult with DOD transportation authorities (MTMC, MSC, MAC, or other) to determine whether secure shipments from the CONUS point of origin to the ultimate foreign destination is feasible. Normally, the United States will use the Defense Transportation System (DTS) to deliver sensitive AA&E to the recipient government.

(1) If, in the course of FMS case processing, the foreign purchaser proposes to take delivery and custody of the AA&E in the United States and use its own facilities for transportation for onward shipment to its territory, the foreign purchaser or its designated representative will be required to submit a transportation plan for DOD review and approval.

(2) This plan, as a minimum, will specify—

(a) The storage facilities.

(b) Delivery and transfer points.

(c) Carriers, couriers or escorts.

(d) Methods of handling to be used from the CONUS point of origin to the final destination and return shipment when applicable.

(3) Security officials of the agency that initiates the FMS transaction will evaluate the plan to determine whether the plan adequately ensures protection of the most sensitive category of AA&E involved.

(4) Unless the agency initiating the FMS transaction approved the transaction plan as submitted, or it is modified to meet U.S. security standards, shipment by other than DTS will not be permitted.

(5) Transmission instructions or the requirement for an approved transportation plan will be incorporated into the security requirements of the U.S. DOD letter of offer and acceptance.

(6) Requests for exception to policy will be per AR 12-1, paragraph 2-4, and forwarded to HQDA (DAMO-ODL-S). An information copy will be provided to CDR, MTMC, ATTN: MT-SS, and HQDA (DAMO-ODL-S).

b. Shipment will be made in accordance with this chapter, until released to an authorized representative of the purchasing government at the port of embarkation (POE) or port of debarkation (POD) as appropriate.

c. As indicated in paragraph 7-12, shipments of classified AA&E to foreign government will be per AR 380-5, chapter 8.

d. During the FMS negotiations, the purchasing government will be advised of the applicability of this regulation to the security sensitive AA&E to be procured. Shipments will be closely coordinated with the authorized representative of the purchasing government to ensure secure storage facilities that essentially meet the requirements of this regulation are available at the POE and POD before the shipments are delivered and released to the recipient country agent in CONUS.

e. For overseas movement, Category I AA&E will be under U.S. security control to POD unless waived by the Defense Security Assistance Agency in coordination with the Director, Security Plans and Programs, Office of the Deputy Under Secretary of Defense for Policy, and FMS agreements will be so written. Return of Category I shipments from overseas will be placed under U.S. security control upon arrival at customs territory of the U.S. (CTUS).

f. HQDA (DAMO-ODL-S) will task the appropriate MACOM to inspect CONUS and OCONUS storage sites at which AA&E for foreign military sales are stored. Results of inspections will be reviewed by DAMO-ODL-S and forwarded with concurrence or nonconcurrence to DCSLOG. Requirements for storage of AA&E in chapter 4 will apply.

7-13. Contract movements

a. DA contracts that procure arms, ammunition, and explosives requiring transportation protective service will normally be written to require free on board (FOB) origin only. For shipment of DOD-procured AA&E contracts will be written to require transportation security per AR 55-355, chapter 33. Contracts will also specify contractor involvement in emergency response procedures and

provide compliance with the AR 55-355, chapter 33, concerning carrier employee identification requirements.

b. DOD AA&E cargo procured under third party contracts will be shipped in accordance with requirements as stated in this regulation. All such shipments are further restricted to military controlled ports or commercial ports safety-approved by the DOD Explosives Safety Board and security-approved by the MTMC, as applicable. These requirements are also applicable to DOD contracts involving foreign procured (OCONUS) AA&E.

c. For deliveries of AA&E to DOD or DOD contractors from foreign contractors, the contract monitor will coordinate with applicable theater commands to arrange equivalent in-country security for delivery only to the nearest U.S.-controlled port facility.

7-14. Security of commercial shipments at DOD installations and activities

a. For AA&E shipments arriving at a destination during other than normal delivery hours, consignees that have the capability to secure the shipments will accept the vehicle on their facilities and secure the vehicle according to the level of transportation protection required for the applicable category.

b. For uncategorized Class A and B ammunition and explosives, consignees must be able to provide a safe haven in accordance with AR 55-355, chapter 33.

c. For emergency situations including breakdowns or other circumstances beyond the carrier's control, installations having safe havens will receive and secure the vehicle after the carrier has exhausted all other means to protect it. For deliveries of AA&E to DOD and DOD contractors from foreign contracts, the contract monitor will coordinate with applicable theater commands to arrange equivalent in-country security for delivery only to the nearest U.S.-controlled port facility.

7-15. Movement of AA&E by unit or organization transportation

a. It is prohibited to carry, move, or store AA&E in privately-owned vehicles (POVs) either on or off installations.

b. Commanders will ensure that enough security measures are taken to protect AA&E being moved by unit or organization transportation, on or off installations. Security measures established will be in accordance with the philosophy of this chapter. AA&E items will not be left unattended or unsecured at any time.

c. Categories I and II AA&E will be placed in the custody of a commissioned officer, warrant officer, noncommissioned officer (E-5 and above), or DOD civilian (GS-5 and above), or DOD contractor employee in a similarly responsive position. Categories I AA&E will be provided armed guard surveillance. Categories II AA&E will be provided armed guard surveillance provided State or territorial law does not prohibit the arming of the guards. In the event that State and territorial law prohibits arming of guards for Category II AA&E, a request for exception to this requirement along with the compensatory security measures will be submitted according to paragraph 2-4.

d. Category III and IV AA&E will be under the continuous positive control of designated, responsible personnel.

e. Movement security criteria does not apply to AA&E issued to individual soldiers or units performing mission requirements. See chapter 2 for physical security requirements of AA&E deployed in the field for training or operational purposes.

f. Bulk shipments of AA&E by unit transportation will be placed

in approved shipping containers, for example, CONEX, MILVAN, SEAVAN. The container will be secured with approved locks.

(1) Containers will be placed door-to-door or door-to-immovable object to prevent unauthorized entry.

(2) A detailed packing list will be placed in the container for inventory purposes with serial numbered items listed by serial number.

(3) AA&E shall not be left unsecured in vehicles.

7-16. Provost marshal and security office support

The local or supporting provost marshal and security office will provide assistance to installation transportation officers in matters relating to physical security requirements for transportation and storage of AA&E.

7-17. Control of protective security seals

Protective security seals used to show the integrity of ammunition and explosives shipments (commercial and organizational) will be accounted for and secured at all times to prevent theft and unauthorized use. Additional pertinent considerations are contained in paragraph 7-3.

7-18. Transportation of marksmanship weapons and ammunition

Marksmanship weapons and ammunition may be transported to, from, and between ranges, matches, and authorized storage locations in POVs in a secure manner as possible, consistent with the design of the vehicle. Such items must be protected from view, and must not be left unattended during halts. Storage during overnight halts or matches must be in accordance with paragraphs 4-16 and 5-8.

7-19. Security standards for AA&E shipments

a. *Category I.*

(1) *Motor — TL:*

(a) Satellite Motor Surveillance Service (SM) and Dual Driver Protective Service with National Agency Check (DN/WAC).

(b) Exclusive use of vehicle ^{1,1}

(c) Locked and sealed by shipper ^{2,2}

(d) Single-line haul required.

(e) Trip lease not authorized.

(f) When two or more vehicles are in convoy, drivers must be in sight of other vehicles at all times. Convoy will only require a single escort vehicle.

(2) *Motor — LTL:*

(a) SM and DN ^{3,3}

(b) CONEX, dromedary, or similar container authorized.

(c) Locked and sealed by shipper ².

(d) Single-line haul required.

(e) Exclusive use of vehicle or authorized container.

(3) *Rail.*

(a) AGS ^{4,4}

(b) MTX ⁴.

(c) Locked and sealed by shipper ^{2/5} ⁵

(d) Immediate notification to consignee of delivery.

(e) Use appropriate Category I motor security for associated motor movement.

(f) Use load divider doors when available.

(4) *COFC.*

(a) In rail phase, same as Category I rail, in motor phase, same as Category I motor.

(b) Use only approved shipping containers and place on railcar

¹ When vehicle is loaded to full visible capacity, do not request exclusive use of vehicle.

² Shipper seal may be removed and replaced by carrier seal (DTMR, chapter 34).

³ Refer to AR 55-355, chapter 34, for additional mandatory transportation requirements.

⁴ When AGS and RSS apply, shipper must report railcar initials and numbers (for example, DODX 40000) to the appropriate MTMC area command to obtain MTX service.

⁵ Includes use of upper rail lock.

⁶ When practicable, consider sending 15 or fewer Category II, III, and IV small arms and missile components by registered mail (Return Receipt Requested).

⁷ Shipments of Category IV AA&E and uncategorized classes of A and B ammunition and explosives with gross weight of less than 200 pounds may be sent by commercial carriers offering DOD CSS without overpacking.

door-to-door to prevent unauthorized access; e.g., MILVAN, SEAVAN.

(5) *Air.*

(a) SM and DDPS (w/NAC) during ground transport.

(b) Shipments by Air Freight, Air Taxi, LOGAIR, QUI-CKTRANS, or MAC.

(c) DOD CSS while aircraft on ground at commercial airports.

(d) For air freight, banded or locked and sealed required. For all other methods, banded or locked and sealed required.

(e) Seals applied by shipper.

(6) *Water.*

(a) SM and DDPS to POE and from POD.

(b) Pier service only.

(c) Written receipt from ship's officer at POE and written release to carrier at POD.

b. *Category II.*

(1) *Motor — TL:*

(a) SM and DN (W/ANAC) ³.

(b) Exclusive use of vehicle ¹.

(c) Locked and sealed by shipper ².

(d) Single line-haul required.

(e) Trip lease not authorized.

(2) *Motor — LTL* ^{6/7}.

(a) SM and DD (W/NAC) ³.

(b) CONEX, dromedary, or similar container authorized.

(c) Cargo packed to a weight of at least 200 lbs. and banded (sealed if practicable) or container locked and sealed by shipper.^{2/8}

(d) Single line-haul required.

(e) Trip lease not authorized.

(3) *Rail.*

(a) RSS⁴.

(b) MTX⁴.

(c) Locked and sealed by shipper^{2/5}.

(d) Immediate notification to consignee of delivery.

(e) Use appropriate Category III or IV motor security for any associated motor movement.

(f) Use load divider when available.

(4) *COFC.*

(a) In rail phase, same as Category III or IV; in motor phase, same as Category III or IV motor.

(b) Use only approved shipping containers and place on railcar door-to-door to prevent unauthorized access; e.g., MILVAN, SEAVAN.

(5) *Air.*

(a) DOD CSS.

(b) Shipments by Air Freight, Air Taxi, LOGAIR, QUI-CKTRANS, or MAC.

(c) Shipper escort to carrier and immediate pickup at destination.

(d) For air freight, banded or locked and sealed required. For all other methods, banded or locked and sealed if practicable.

(e) Seals applied by shipper ^{9/9}.

(6) *Water.*

(a) Pier Service only.

(b) Written receipt from ship's officer at POE and written release to carrier at POD.

c. *Categories III, IV and Uncategorized Classes A and B Ammunition and Explosives.*

(1) *Motor — TL:*

(a) SM and DD (W/NAC) ³.

(b) Locked and sealed by shipper ².

(c) Trip lease not authorized.

(d) Single line-haul preferred.

(2) *Motor — LTL* ^{6/7}.

(a) SM and DD (W/NAC) ³.

(b) CONEX, dromedary, or similar container authorized.

(c) Cargo packaged to a weight of at least 200 lbs. and banded (sealed if practicable) or container locked and sealed by shipper^{2/8}.

(d) Trip lease not authorized.

(e) Single line-haul preferred.

(3) *Rail.*

(a) RSS ⁴.

(b) MTX ⁴.

(c) Locked and sealed by shipper ^{2/5}.

(d) Immediate notification to consignee of delivery.

(e) Use appropriate category III or IV motor security for any associated motor movement.

(f) Use load divider doors when available.

(4) *Rail.*

(a) In rail phase, same as for rail category III and IV; in motor phase, same as motor category III and IV.

(b) Use only approved shipping containers and place on railcar door-to-door to prevent unauthorized access; e.g., MILVAN, SEAVAN.

(5) *Air.*

(a) DOD CSS.

(b) Shipments by Air Freight, Air Taxi, LOGAIR, QUI-CKTRANS, or MAC.

(c) Shipper escort to carrier and immediate pickup at destination.

(d) For air freight, banded or locked and sealed required. For all other methods, banded or locked and sealed if practicable.

(e) Seals applied by shipper ⁹.

(6) *Water.*

(a) Pier service only.

(b) Written receipt from ship's officer at POE and written release to carrier at POD.

Chapter 8 Reports, Investigative Aids, and Disposition of Records

8-1. General

The provisions of this chapter do not preclude the submission of other reports, such as the requirements in AR 55-38/NAVSUPINST 4610.33B/AFR 75-18; MCOP 4610.19C/DLAR 4500.15, chapters 2 and 3. The provisions of this chapter do not apply to privately-owned weapons.

8-2. Incident reports to components

a. Each MACOM will establish procedures to ensure receipt of a report of arms, ammunition, and explosives stolen, lost, unaccounted for, or recovered, including gains or losses due to inventory adjustments. Notification will be furnished in a manner commensurate with the seriousness or nature of the incident. The loss, theft, recovery, or inventory adjustment of the following will be reported:

(1) Missiles, rockets, and arms as set forth in appendix B.

(2) One-thousand rounds or more of ammunition smaller than 40mm and 1,000 rounds or more of 40mm automatic weapon ammunition.

(3) Individual rounds of 40mm and larger nonautomatic weapon ammunition.

(4) Individual mortar, grenade, and missile rounds.

(5) Individual land mines, demolition charges, and blocks of bulk explosives.

(6) Other items with 10 or more pounds of net explosive weight.

(7) Any Category I or Category II item not otherwise included above.

(8) Commanders will—

(a) Submit a serious incident report (SIR) if required by AR 190-40, paragraph 4-9.

(b) Within 72 hours provide a report on DA Form 3056 (Report

^{2/8} MILSTD 129 applies.

⁹ Air carriers providing pickup and delivery service by motor vehicle must comply with all applicable motor security requirements for the risk category during the motor phase. These protective services must be specified in appropriate Uniform Tenders of Service.

of Missing/Recovered Firearms, Ammunition, and Explosives) (RCS Just-1010)) on incidents meeting criteria in *a* above. Inventory and in-transit losses or discrepancies of AA&E, not due to theft, recovered within 12 days, need not be reported on DA Form 3056.

(c) Initiate a report of recovery on DA Form 3056 for AA&E items held as evidence by any local, State, or Federal law enforcement agency in the area. Notify the commander having lost the items.

(d) Promptly submit appropriate report to the NCIC and DOD Central Registry (see para 8-3).

(e) Ensure the dollar value of the loss or recovery is included in section H, DA Form 2819 (Law Enforcement and Discipline Report) per AR 190-45, paragraph 6-3.

(f) Conduct investigations per AR 15-6, chapters 3 through 5, as specified in paragraph 2-9 when losses equal or exceed the amounts shown in appendix E. AR 15-6 investigations may be conducted for lesser amounts.

(g) Reports will include incidents involving arms and ammunition meeting criteria in *a* above, in the custody of a nonappropriated fund activity (such as an exchange, rod and gun club, or recreational marksmanship activity).

b. The Director, Security Plans and Programs, Office of the DUSDP (ODUSDP), will be provided advice by telephone from the HQDA of all significant incidents of theft, loss, or unaccounted for AA&E as soon as possible but not later than 72 hours after occurrence or discovery. Loss or theft of the following A&E will be considered significant (see AR 190-40, para 4-9, for further guidance).

(1) One or more missile or rocket rounds.

(2) One or more machine guns.

(3) Five or more automatic or semiautomatic weapons.

(4) Five or more manually operated weapons.

(5) Ammunition.

(a) .50 caliber and smaller — 5,000 rounds or more, except 20,000 rounds or more of .38 caliber ammunition.

(b) Larger than .50 caliber — five rounds or more of non-automatic weapon ammunition.

(c) Larger than .50 caliber — 1,000 rounds or more of automatic weapon ammunition.

(d) Five or more fragmentation, concussion, or high explosive grenades.

(6) One or more mines (antipersonnel and antitank).

(7) Demolition charges, blocks of explosives, and other explosives — 100 pounds or more net weight.

c. Also reportable are:

(1) Armed robberies or attempted armed robberies.

(2) Forced entries or attempted forced entries in which there is physical evidence of the attempt.

(3) Any evidence of terrorist involvement.

(4) Incidents that cause significant news coverage, or appear to have the potential to cause such coverage.

(5) Any evidence of trafficking, such as bartering for narcotics or taking AA&E across international borders, regardless of the quantity of AA&E involved.

d. Procedures for reporting significant loss, theft, and recovery of AA&E and for reporting of actual or attempted break-ins of AA&E storage facilities are per AR 190-40, paragraph 4-9. Commanders will ensure timely submission of SIR. Significant initial and follow-up data must be provided to answer questions who, what, where, when, how, and why concerning the incident. Provide information on physical security measures taken to prevent recurrence of similar incident. Additionally, if any loss or recovery involved inventory or accountability standards, list procedures in effect. If actual or attempted forced entry is involved, show—

(1) Time of discovery.

(2) Method of entry or attempted entry.

(3) Measures used to neutralize or bypass security measures.

(4) AA&E or other items missing, if any.

(5) Physical security posture of facility at time of incident, use of guards, IDS, barriers, and other security measures.

(6) Date of last survey or inspection.

(7) Compliance with regulatory physical security requirements.

e. MACOMs will maintain records including, at the very minimum, all instances of thefts, losses, and recoveries of AA&E, including any reported under *a* above. Requirement also applies to ARNG and Civilian Marksmanship Program (CMP). These records will include:

(1) A summary of the circumstances in each instance.

(2) Dates, locations, and units such as Regular, Reserve, National Guard, or Director of Civilian Marksmanship.

(3) A statement regarding the loss or recovery based on the investigation, such as inventory, theft, in-transit, training, operational, or other.

f. HQDA will provide the Director, Security Plans and Programs, ODUSP, follow-up information, in writing, of significant incidents until the investigation is complete. MACOMs, ARNG, and CMP will provide the follow-up information to HQDA (DAMO-ODL-S).

8-3. Investigative aids

HQDA will establish procedures to ensure that appropriate information is submitted to the NCIC and to the DOD Central Registry promptly upon the discovery of the loss or theft of DOD arms. Information also will be submitted to the NCIC and the DOD Central Registry upon recovery of DOD arms. Appropriate information on the theft or suspected theft of AA&E also will be provided to local Federal Bureau of Investigation (FBI) officers and local police. The following procedures apply:

a. Lost, stolen, or recovered weapons will be entered in the NCIC per AR 190-27, section 2, paragraph 6.

b. USACIDC will provide the Bureau of Alcohol, Tobacco and Firearms (BATF) Intelligence Division, BATF Headquarters, Department of the Treasury, Washington, DC 20226, information concerning theft or loss of AA&E falling within their investigative purview, within 72 hours of confirmed theft or loss.

c. CONUS installation commanders, provost marshals (PMs), or their designated representatives, will send DA Form 3056 to the NCIC Army Field terminal responsible for the geographical area in which the installation is located. Proper entry will be made in the NCIC. OCONUS installation commanders, PMs, or their designated representatives, will send the completed DA Form 3056 to Director, Crime Records Center (CRC), 2301 Chesapeake Avenue, Baltimore, MD 21222-4099. Lost, stolen, or recovered weapons entries into the NCIC from overseas commands will be made by Director, CRC.

d. CONUS Army field terminals, after making entry into the NCIC, will annotate Item 11 of DA Form 3056 and distribute the form per instructions on the form.

e. Ammunition and explosive losses or recoveries will not be entered in the NCIC files.

f. Lost, stolen, or recovered weapons will be promptly entered in the DOD Central Registry per AR 710-3, chapter 4. Information on the source of the weapon report will be included. Recovered weapons will be cleared from the NCIC files.

g. Military weapons will be accepted from civil (local, State, and Federal) law enforcement agencies. A weapon will be accounted for per AR 735-5, chapter 14, if both of the following apply:

(1) The weapon can be identified as a military weapon. If the weapon satisfies the general specifications for a military weapon, assume that it is a military weapon; a serial number or other identification is desirable, but not required.

(2) The weapon is no longer required for evidence in criminal or administrative proceedings.

h. To identify weapon ownership, personnel may contact the DOD Central Registry at: Commander, U.S. Army Armament Munitions and Chemical Command, ATTN: AMSMC-MMD-LW, Rock Island, Illinois 61299-6000, DSN 793-4678/4977/6519 or commercial (309) 782-4678/4977/6519. Recovered weapons identified as property of another DOD agency will be returned to that agency only upon request of the agency concerned. Normally, the weapons will be considered Army property and treated as such. Serviceable weapons should be returned immediately to normal use if required

by the activity. The weapon may be excess or not authorized to support the mission of the activity. If so, the weapon will be reported to the proper national weapons inventory manager for redistribution or reuse. If the national weapons inventory manager provides disposal instructions, the activity will dispose of the weapon according to existing disposal and demilitarization procedures.

i. Address inquiries on loss, theft, or recovery of firearms, ammunition, and explosives to HQDA (DAMO-ODL-S).

8-4. Disposition of records

a. DA Components (MACOMs, ARNG, and CMP) will establish procedures to ensure that records reflect the final disposition of investigative action, including recoveries and disciplinary action, as appropriate.

b. Information pertaining to the final disposition of investigative action will be made to the Director, Security Plans and Programs, ODUSDP, by HQDA, per paragraphs 8-2*b* and 8-2*c*. MACOMs, ARNG, and CMP will provide the information to HQDA (DAMO-ODL-S).

Appendix A References

Section I Required Publications

AR 12-1

Security Assistance—Policies, Objectives, and Responsibilities (Cited in para 7-12).

AR 15-6

Procedures for Investigating Officers and Boards of Officers Conducting Investigations (Cited in paras 2-9 and 8-2).

AR 50-6-1

Chemical Agent Security Program (Cited in para B-2).

AR 55-38

Reporting of Transportation Discrepancies in Shipments (NAVSUPINST 4610.33B/AFR 75-18/MCOP 4610.19C/DLAR 4500.15). (Cited in para 8-1).

AR 55-355

Defense Traffic Management Regulation (NAVSUPINST 4600.70/AFR 75-2/MCO P4600.14B/DLAR 4500.3). (Cited in paras 1-1, 4-5, 7-3, 7-5, 7-10, 7-13, and 7-14).

AR 190-13

The Army Physical Security and Crime Prevention Program. (Cited in paras 1-4, 1-5, 2-1, 2-6, 2-10, 3-1, 3-2, 3-5, 4-2, 4-7, 4-8, and 6-3).

AR 190-22

Searches, Seizures, and Disposition of Property. (Cited in para 4-5).

AR 190-27

Army Participation in National Crime Information Center (NCIC). (Cited in para 8-3).

AR 190-40

Serious Incident Report. (Cited in paras 1-4 and 8-2).

AR 190-45

Military Police Law Enforcement Reporting. (Cited in para 8-2).

AR 190-51

Security of Army Property at Unit and Installation Level. (Cited in paras 4-1, 3-13, and 4-6).

AR 190-56

The Army Civilian Police and Security Guard Program. (Cited in para 2-10).

AR 380-5

Department of the Army Information Security Program. (Cited in paras 1-1, 3-6, 3-8, 4-3, 5-6, 5-12, 7-1, 7-12, and F-1).

AR 380-67

Personnel Security Program. (Cited in paras 2-12, and 3-6).

AR 385-64

Ammunition and Explosives Safety Standards. (Cited in paras 1-1, 5-2, and 5-4).

AR 700-99

Acquisition, Accounting, Control, and Disposal of Captured Enemy Equipment and Foreign Materiel. (Cited in para 4-12).

AR 710-2

Supply Policy Below the Wholesale Level. (Cited in paras 2-6, 2-8, 4-1, 4-5, 6-1, and 6-3).

AR 710-3

Asset and Transaction Reporting System. (Cited in paras 4-13, 6-2, and 8-3).

AR 735-5

Policies and Procedures for Property Accountability. (Cited in paras 2-9, 6-4, and 8-3).

AR 740-26

Physical Inventory Control. (Cited in paras 2-6, 5-2, 6-1, and 6-3).

DA Pam 710-2-1

Using Unit Supply System Manual Procedures. (Cited in paras 2-1, 2-2, and 2-6).

Section II Related Publications

AR 11-2

Internal Control Systems

AR 708-1

Cataloging and Supply Management Data

AR 870-20

Museums and Historical Artifacts

CDA Pam 18-1

Code Reference Guide (This publication is available upon request from Chief, U.S. Army Materiel Command, Catalog Data Activity, ATTN: AMXCA-DL, New Cumberland Army Depot, New Cumberland, PA 17070-5010).

DA Pam 385-64

Ammunition and Explosives Safety Standards

DA Pam 710-2-2

Supply Support Activity Supply System Manual Procedures

DOD 4000.25-8-M

Military Assistance Program Address Directory System (MAPAD)

DOD 4145.26-M

Department of Defense Contractors Safety Manual for Ammunition and Explosives

DOD 4160.21-M

Defense Utilization and Disposal Manual

DOD 4160.21-M-1

Defense Demilitarization Manual

DOD 4500.32-R

Military Standard Transportation and Movement Procedures (MILSTAMP), Volume I

DOD 5160.65-M

Single Manager for Conventional Ammunition Implementing Joint Conventional Ammunition Policies and Procedures

DOD 5200.1-R

Information Security Program Regulation

DOD 5200.2-R

Department of Defense Personnel Security Program

DOD 5220.22-M

Industrial Security Manual for Safeguarding Classified Information

DOD 5220.22-R

Industrial Security Regulation

DOD 6055.9-STD

DOD Ammunition and Explosives Safety Standards

DOD 7200.10-M

Department of Defense Accounting and Reporting of Government Property Lost, Damaged, or Destroyed

DOD Directive 3224.3

Physical Security Equipment: Assignment of Responsibility for Research, Engineering, Procurement, Installation, and Maintenance

DOD Directive 5100.76

Physical Security Review Board

DOD Directive 5210.65

Chemical Agent Security Program

DOD Instruction 4150.35

Physical Inventory Control for DOD Supply System Materiel

DOD Instruction 5200.30

Physical Security of Sensitive Conventional Arms, Ammunition, and Explosives at Contractor Facilities

FM 19-30

Physical Security

JCS Pub. 1

Department of Defense Dictionary of Military and Associated Terms

MIL-HDBK-1031/1

Military Handbook, Design Guidelines for Physical Security of Fixed Land-Based Facilities

18 USC 842(J)

Title 18, United States Code, 842(J) (27 CFR 55, subpart k, sections 207 and 208)

49 USC 1801 and 1805

Title 49, United States Code, Sections 1801-1805 (49 CFR 177)

TM 9-1300-206

Ammunition and Explosives Standards

TM 38-214

DOD Small Arms Serialization Program (DODSASP): Functional Users Procedures

Section III

Prescribed Forms

Authority is given for the exact duplication of any DA or DD Forms prescribed in this regulation that are generated by the automated Military Police Management Information System in place of the official printed version of the form.

Forms that have been designated, "Approved for electronic generation (EG)," must replicate exactly the content (wording), format (layout), and sequence (arrangement) of the official printed form. The form number of the electronically generated form will be shown as "-R-E" and the date will be the same as the date of the current edition of the printed form.

DA Form 3056

Reporting of Missing/Recovered Firearms, Ammunition, and Explosives (Prescribed in paras 2-10, 7-2, and 7-3. Approved for EG.)

DA Form 4604-R

Security Construction Statement (Prescribed in para 2-2. Approved for EG.)

DA Form 4930-R

Alarm/Intrusion Detection Record (Prescribed in para 3-6. Approved for EG.)

DA Form 7281-R

Command Oriented Arms, Ammunition, and Explosives (AA&E) security Screening and Evaluation Record (Prescribed in para 2-11. Approved for EG.)

DA Form 5513-R

Key Control Register and Inventory. (Prescribed in para 3-8.)

Section IV

Referenced Forms

DA Form 2028

Recommended Changes to Publications and Blank Forms

DA Form 2609

Historical Property Catalog

DA Form 2819

Law Enforcement and Discipline Report

DA Form 3749

Equipment Receipt

DD Form 1348-1

DOD Single Line Item Release/Receipt Document

SF 700

Security Container Information

Appendix B

Sensitive Arms, Ammunition, and Explosives (AA&E) Security Risk Categorization

B-1. Application

The requirements of this regulation apply only to rounds of 40mm and larger, conventional, guided missile and rocket ammunition weighing 100 pounds or less per round, and 1,000 or more rounds of ammunition smaller than 40mm. Blank ammunition, .22 caliber rimfire ammunition, and inert training ammunition are excluded from the requirements of this regulation. Further, artillery, tank, mortar ammunition, 90mm and larger are excluded from the requirements of this regulation.

a. On the basis of their relative utility, attractiveness, and availability to criminal elements, all AA&E will be categorized according to the risks involved. As a general rule, only arms, missiles, rockets, explosive rounds, mines, and projectiles that have an unpacked unit weight of 100 pounds or less will be categorized as sensitive for purposes of this regulation. Any single container that contains a sufficient amount of spare parts that, when assembled, will perform the basic function of the end item will be categorized the same as the end item.

b. The categories of missiles, rockets, and arms will be as stated in paragraph B-2. Nonnuclear missiles and rockets similar to those listed under Category I will automatically be included in that category as they come into the inventory.

c. Identifications, codings, corollary plans, and actions for physical security accountability and transportation pertaining to sensitive conventional arms, rockets, missiles, ammunition, and explosives will be uniform throughout the DOD. These items will be integrated into standard catalog data by all services and will be included in applicable documents that address physical security, accountability, storage, transportation, and other related functional activities. The JOCG through tri-service coordination, will use the Decision Logic Formulas (tables B-1 to B-6), and will determine the appropriate categories for ammunition and explosives items. Those responsible

for the physical security of facilities storing AA&E will look up the assigned categories in the Army Master Data File (AMDF). Examples of sensitive ammunition and explosive items are shown in paragraph B-2.

d. To ensure a uniform approach to sensitive item identification and coding, AMC will incorporate the criteria into their respective cataloging policies and procedures. The criteria will also become a part of the federal cataloging system. Sensitive AA&E items are identified by the controlled item codes per AR 708-1, chapter 7. These codes indicate the controls required for storing and transporting each category of AA&E and are listed in the AMDF. The AMDF is the official source of current security risk codification of all sensitive AA&E items. Codes assigned to specific AA&E items are shown in the monthly AMDF near the center of the microfiche under the column "(CIIC)." The AMDF microfiche for AA&E, and Catalog Data Activity (CDA) Pamphlet 18-1, Code Reference Guide, are available upon request from Chief, U.S. Army Materiel Command, Catalog Data Activity, ATTN: AMXCA-DL, New Cumberland Army Depot, New Cumberland, PA 17070-5010. The basic responsibility for the assignment and correction of the codes rests with the designated data proponent. Per AR 708-1, chapter 5, U.S. Army Armament, Munitions, and Chemical Command is primarily responsible for materiel management for weapons and ammunition; U.S. Army Missile Command is primarily responsible for materiel management of large rockets and guided missiles per AR 708-1, chapter 5. Further information or assistance regarding security risk codification may be obtained by contacting the AMC Logistics Assistance Offices which are located at selected installations Army-wide.

e. AMC will revise, as appropriate, ammunition and explosives codings by means of routine catalog data changes. The exception to applying the methodology in c above shall be when tri-Service agreement is reached on a case-by-case basis to place an item in a higher or lower security risk category than that indicated by the total numerical value.

B-2. Representative risk categories

a. Category I (missiles and rockets).

(1) Nonnuclear manportable missiles and rockets "in a ready to fire" configuration; for example, Hamlet, Redeye, Stinger, Dragon, Javelin, light antitank weapon (LAW) and Viper. The AT-4 antitank weapon is also included.

(2) This category also applies where the launcher tube and the explosive rounds are jointly stored or transported.

b. Arms.

(1) *Category II.* Light automatic weapons, including .50 caliber, M16A2 rifle, Squad Automatic Weapon (SAW), and 40mm MK 19 machine gun.

(2) Category III.

(a) Launch tube and gripstock for Stinger missile.

(b) Launch tube, sight assembly, and gripstock for Hamlet and Redeye missiles.

(c) Tracker for Dragon missiles.

(d) Mortar tubes up to and including 81mm.

(e) Grenade launchers.

(f) Rocket and missile launchers, unpacked weight of 100 pounds or less.

(g) Flame throwers.

(h) The launcher or missile guidance set or the optical sight for the ground mounted TOW.

(i) Launch control unit for Javelin missile.

(3) Category IV.

(a) Shoulder-fired weapons, other than manportable missiles, rockets, and grenade launchers, not fully automatic.

(b) Handguns.

(c) Recoilless rifles, including 90mm.

c. Ammunition and explosives.

(1) *Category I.* Explosive complete rounds for Category I missiles and rockets (See a(1) above).

(2) Category II.

(a) Hand or rifle grenades, high explosive, and white phosphorus.

(b) Mines, antitank, or antipersonnel (unpacked weight of 50 pounds or less each).

(c) Explosives used in demolition operations; for example, C-4, military dynamite, and TNT.

(d) Critical binary munitions components containing "DF" and "QL" when stored separately from each other and from the binary chemical munition bodies in which they are intended to be employed (See AR 50-6-1, chap 5 and app D, Chemical Agency Security Program, for security requirements of other chemical agents).

(3) Category III.

(a) Ammunition, .50 caliber and larger, with explosive filled projectile (unpacked weight of 100 pounds or less each).

(b) Grenades, incendiary, and fuzes for high explosive grenades.

(c) Blasting caps.

(d) Supplementary charges (uninstalled, or installed in projectiles in a manner allowing easy removal without special tools or equipment).

(e) Bulk explosives.

(f) Detonating cord.

(4) Category IV.

(a) Ammunition with nonexplosive projectile (unpacked weight of 100 pounds or less each).

(b) Fuzes, except for (3)(b), above.

(c) Grenades, illumination, smoke, and CS/CN (tear producing).

(d) Incendiary destroyers.

(e) Riot control agents, 100 pound package or less.

(f) Ammunition for weapons in (3), above, not otherwise categorized.

Table B-1
Decision Logic Formulas (DLFs)

Factor: 1

Utility: High

Casualty/Damage Effect: High

Adaptability: Without modification

Portability: Easily carried or concealed by one person.

Factor: 2

Utility: Moderate

Casualty/Damage Effect: Moderate

Adaptability: Slight modification

Portability: Can be carried by one person for short distances.

Factor: 3

Utility: Low

Casualty/Damage Effect: Low

Adaptability: Major modification

Portability: Requires at least two persons to carry.

Factor: 4

Utility: Impractical

Casualty/Damage Effect: None

Adaptability: Impractical

Portability: Requires materials handling equipment (MHE) to move.

Table B-2
Risk Factors—Utility

Risk Factor: 1

Utility: High

Description: High explosive, concussion, and fragmentation devices.

Risk Factor: 2

Utility: Moderate

Description: Small arms ammunition.

Risk Factor: 3

Utility: Low

Description: Ammunition items not described above—NONLETHAL, civil disturbance chemicals, incendiary devices.

Risk Factor: 4

Utility: Impracticable

Table B-2**Risk Factors—Utility—Continued**

Description: Practice, inert, or dummy munitions; small electric explosive devices; fuel thickening compound; or items possessing other characteristics which clearly and positively negate potential use by terrorist, criminal, or dissident functions.

Table B-3**Risk Factors—Casualty/Damage Effect****Risk Factor: 1**

Casualty/Damage Effect: High

Description: Extremely damaging or lethal to personnel; devices which will probably cause death to personnel or major material damage.

Risk Factor: 2

Casualty/Damage Effect: Moderate

Description: Moderately damaging or injurious to personnel; devices which could probably cause personnel injury or material damage.

Risk Factor: 3

Casualty/Damage Effect: Low

Description: Temporarily incapacitating to personnel.

Risk Factor: 4

Casualty/Damage Effect: None

Description: Flammable items and petroleum based products readily obtainable from commercial sources.

Table B-4**Risk Factors—Adaptability****Risk Factor: 1**

Adaptability: Without

Description: Unusable as is; simple to function without modification use of other components.

Risk Factor: 2

Adaptability: Slight Modification

Description: Other components required; or can be used with slight modification.

Risk Factor: 3

Adaptability: Major Modification

Description: Requires the use of other components which are not available on the commercial market; or can be used with modification that changes the configuration.

Risk Factor: 4

Adaptability: Impracticable

Description: Requires specified functions or environmental sequences which are not readily reproducible, or construction makes it incapable of producing high order detonation; for example, gas generator grains, and impulse cartridges.

Table B-5**Risk Factors—Portability****Risk Factor: 1**

Adaptability: High

Description: Items which easily can be carried by one person and easily concealed.

Risk Factor: 2

Adaptability: Moderate

Description: Items whose shape, size, and weight allows them to be carried by one person for a short distance.

Risk Factor: 3

Adaptability: Low

Description: An item whose shape, size, and weight requires at least two persons to carry.

Risk Factor: 4**Table B-5****Risk Factors—Portability—Continued**

Adaptability: MHE Required

Description: The weight, size, and shape of these items preclude movement without MHE.

Table B-6**Computation of risk factor numerical values ¹**

Evaluation: High Sensitivity

Numerical Values of Risk Factors: (4–5)

Physical Security Risk Category Code: II

Evaluation: Moderate Sensitivity

Numerical Values of Risk Factors: (6–8)

Physical Security Risk Category Code: III

Evaluation: Low Sensitivity

Numerical Values of Risk Factors: (9–12)

Physical Security Risk Category Code: IV

Notes:

¹ AMC shall use the logic formula in table B-1, to determine the numerical values and the physical security risk category codes as shown above. (Use only one factor value for each column and total the numbers for each column to obtain the security risk category.)

Appendix C**Physical Security Standards for Commercial Terminals (Extracted from DOD 5100.76-M)**

Table C-1 lists levels physical security standards for commercial terminals carrier service on Government Bill of Lading (GBL). This information is an extract from DOD 5100.76-M.

Table C-1**Physical Security Standard for Commercial Terminals**

If the carrier service on the GBL is: Armed Guard Surveillance (AGS)
Equivalent terminal standards are: Stop must be at a carrier terminal, a State or local safe haven under 49 CFR or during emergencies, at a DOD safe haven or refuge location. The vehicle or shipment must be under constant surveillance by an armed guard specifically dedicated to the shipment or shipments secured in an adequately lighted area that is surrounded by a chain link fence, minimum height 6-feet, and continuously patrolled by an armed carrier or terminal employee who checks the shipment at least once every 30 minutes.

If the carrier service on the GBL is: Protective Security Service (PSS)
Equivalent terminal standards are: If the shipment is unloaded from a conveyance, it must be at a facility cleared under the Defense Industrial Security Program or at a DOD safe haven and be placed under constant surveillance by a qualified carrier representative. As an alternative, the shipment may be placed in a closed area, vault or strongroom approved by the Defense Investigative Service. Construction standards for closed areas, vaults, and strongrooms are contained in DOD 5220.22-M, appendixes IV and V.

If the carrier service on the GBL is: Dual Driver Protective Service (DDPS)

Equivalent terminal standards are: Stop must be at a carrier terminal, a State or local safe haven under 49 CFR or, during emergencies, at a DOD safe haven or refuge location. The vehicle or shipment must be under constant surveillance by a qualified carrier or terminal representative who must keep the shipment in unobstructed view at all times and stay within 10 feet of the vehicle or the shipment must be secured in a fenced and lighted area under the general observation of a qualified carrier or terminal representative at all times. As an alternative, the shipment may be placed in a security cage.

If the carrier service on the GBL is: DOD Constant Surveillance Service (CSS)

Equivalent terminal standards are: Stop must be at a carrier terminal,

Table C-1
Physical Security Standard for Commercial Terminals—Continued

a State or local safe haven under 49 CFR or, during emergencies, at a DOD safe haven or refuge location. The vehicle or shipment must be under constant surveillance by a qualified carrier or terminal representative who must keep the shipment in view at all times and stay within 100 feet of the vehicle or the shipment must be secured in a fenced and lighted area under the general observation of a qualified carrier or terminal representative at all times. As an alternative, the shipment may be placed in a security cage.

If the carrier service on the GBL is: Rail Surveillance Service (RSS)
Equivalent terminal standards are: Within rail yards, RSS applies. Within other terminals, shipment shall be secured in a fenced and lighted area under the general observation of a qualified carrier or terminal representative at all times.

If the carrier service on the GBL is: Signature and Tally Record
Equivalent terminal standards are: Each person responsible for proper handling of a shipment during any terminal stop must sign the signature and tally record at the time they assume responsibility for a shipment. The shipment must always be in the custody of the last person signing the signature and tally record.

If the carrier service on the GBL is: Security Cage Requirements
Equivalent terminal standards are: Shall be in accordance with requirements identified in DOD 5220.22-M, appendixes IV and V.

Appendix D

Physical Security Standards for Military Terminals (Extracted from 5100.76-M)

D-1. Introduction

This appendix prescribes standards for protection of sensitive conventional AA&E military transportation terminals. It also applies to sensitive classified AA&E that meet requirements of DOD 5200.1-R, as implemented by AR 380-5. When a terminal has a separate, long-term storage mission, storage criteria of chapters 4 and 5 of this regulation apply to the long-term storage areas of the terminal. Criteria for commercially operated, in-transit transportation terminals are found in appendix B.

D-2. Security priorities

The provisions of this appendix are based on the following priorities for cargo and area security protection. Responsible MACOMs will ensure that security resources are allocated to meet the highest priority requirements first. The priorities, in descending order, are:

- a. Category I cargo protection.
- b. Pier and waterfront security.
- c. Category II cargo protection.
- d. Gates and perimeter security.
- e. Category III and IV cargo protection.
- f. Support activity security.

D-3. Risk category identification

Terminals will establish procedures to ensure prompt identification of the risk categories of arriving cargo in order to provide security protection required by this regulation. When cargo cannot be immediately identified upon arrival, it will be secured as Category I pending identification.

D-4. Temporary storage

a. Category I and II cargo.

(1) *Fencing.* Category I and II cargo will be stored only in fenced and lighted areas dedicated to cargo storage. Fencing requirements in DOD 5100.76-M, chapter 5, section C, apply.

(2) *Supplemental controls.*

(a) Category I temporary storage areas or individual conveyances

will be equipped with IDS or provided constant surveillance. Pending installation of IDS, the intervals between checks may not exceed 1 hour. When IDS is used, patrol intervals may not exceed 8 hours.

(b) Category II temporary storage areas or individual conveyances will be equipped with IDS or checked by a guard patrol at irregular intervals not to exceed 1 hour while in storage. When IDS is used, patrol intervals may not exceed 16 hours.

b. Category III and IV munitions cargo.

(1) *Fencing.* Category III and IV cargo will be enclosed within barbed wire fencing where terminal perimeter fencing is not in place or does not meet the criteria of this regulation. New security lighting systems may not be programmed for Category III and IV storage areas unless determined necessary based on an assessment of the local threats and vulnerabilities.

(2) *Supplemental controls.* IDS may not be programmed for Category III or IV storage areas unless determined necessary based on an assessment of the local threats and vulnerabilities. Cargo that is protected by IDS will be checked by a guard patrol at irregular intervals not to exceed 48 hours. Unalarmed cargo will be checked at least once each 24 hours.

(3) *Placement of cargo.* Placement of cargo other than Category I and II in fenced or lighted areas will be in priority order based on the risk category of cargo.

D-5. Cargo movement

a. Category I and II.

(1) Each Category I conveyance or integrated grouping of five or fewer conveyances moved within the terminal will be under continuous surveillance of at least one terminal employee or selected contractor employee under contract to the terminal to handle cargo. Where the terminal area is physically separated from a long-term storage area, movement between these areas will be under continuous armed guard surveillance, with two drivers for each conveyance.

(2) Each Category II conveyance or integrated grouping of five or fewer conveyances moved within the terminal will be under continuous surveillance of at least one terminal employee or selected contractor employee under contract to the terminal to handle cargo. Where the terminal area is physically separated from a long-term storage area, movement between these areas will be under continuous employee surveillance, with two drivers for each conveyance.

b. Category III and IV cargo.

(1) Category III and IV cargo will be moved within the terminal under the general surveillance of the terminal or contractor employees moving the cargo. There is no distance requirement for general surveillance. However, procedures for movement will ensure cargo is either within sight of employees or is provided the required guard patrol checks for storage areas.

(2) Where the terminal area is physically separated from a long-term storage area, movement between these areas will be under continuous surveillance of at least one terminal employee or selected contractor employee for each conveyance.

D-6. Terminal area security

a. *Waterfront and Ships at Berth.* Piers and adjacent waterfront areas without cargo or ships will be patrolled at least hourly by an armed guard. When ships are at berth, piers will be patrolled by armed guard at irregular intervals not to exceed 30 minutes. IDS may be used at the terminal commander's discretion. When IDS is used, the patrol frequency may extend to 4 hours for piers or waterfront without ships or cargo. When cargo is present, armed guards, IDS surveillance, or patrol checks will be as prescribed for the highest category of cargo or at intervals not to exceed 30 minutes whichever is more stringent. Waterborne patrols will be used to augment land based patrols where feasible.

b. *Terminal Gates and Perimeter Areas.* Terminal gates require continuous armed guard protection or surveillance while in use. Secured gates and perimeter areas require IDS protection or patrol checks at least once each 4 hours. When IDS is used, patrol intervals may extend to 24 hours.

D-7. Seals and twists

Terminals will install an approved seal on all AA&E conveyances on which the original shipper seal is removed. Additionally, all conveyances will have a No. 5 steel wire twist installed on door openings if the seal does not provide equivalent protection. Seal and twist checks for evidence of breakage or tampering will be made a part of regular patrol or surveillance procedures and of pier loading procedures. Category I and II seals will be verified by number once each shift.

D-8. Guard protection and surveillance

The requirements in chapter 5, section E, this regulation apply.

D-9. Terminal entry controls

a. Terminals will be closed areas with strict vehicle and pedestrian entry controls. All pedestrians or vehicles will be subject to search, and a visitor control system will be established. When feasible, entry to the AA&E storage and processing areas will be separately controlled from the terminal administrative areas. Privately-owned vehicles may not be allowed into AA&E storage and processing areas of the terminal without the Terminal Commander's permission. Hunting, if allowed, will be rigidly controlled and minimized.

b. Piers, waterfront, and AA&E storage and processing areas will be designated and posted as restricted areas.

Appendix E

Losses/Overages List for AR 15-6 Investigations General

Appendix B describes in detail items that must be secured according to this regulation. When losses equal or exceed the amounts shown below, commanders will conduct investigations under AR 15-6, chapters 3 through 5, and as specified in chapter 2 of this regulation. AR 15-6 investigations may be conducted for lesser amounts.

a. *Missiles and rockets.* All nonnuclear missile systems in a ready-to-fire configuration or when the launcher tube and explosive rounds are jointly stored or transported.

b. *Arms.* One or more of the following:

- (1) Machineguns and automatic weapons up to and including .50 caliber.
- (2) Launch tube and gripstock for Stinger missile.
- (3) Launch tube, sight assembly, and gripstock for Hamlet and REDEYE missiles.
- (4) Tracker for Dragon Missiles.
- (5) Mortar tubes.
- (6) Grenade launchers.
- (7) Rocket and missile launchers, unpacked weight of 100 pounds or less.
- (8) Flame thrower.
- (9) Launcher and/or missile guidance set and/or the optical sight for the TOW.
- (10) Shoulder-fired weapons, other than grenade launchers, not fully automatic.
- (11) Handguns.
- (12) Recoilless rifles up to and including 90mm.
- (13) Major parts (e.g., barrels, frames, receivers, major subassemblies).
- (14) Subcaliber training aids capable of firing a projectile by means of a powder charge.
- (15) Other individually operated weapons that are:
 - (a) Portable and can be fired without special mounts or firing devices.

(b) Have potential use in civil disturbances.

(c) Vulnerable to theft.

c. *Ammunition and explosives.*

(1) One or more of the following:

(a) Explosive complete rounds or warheads for Category I missiles and rockets.

(b) Hand or rifle grenades (fragmentation, high explosive, concussion, white phosphorus, or incendiary).

(c) Mortar rounds up to and including 81mm.

(d) Mines, antitank, or antipersonnel.

(e) High-explosive complete rounds or war-heads for missiles and rockets other than Category I (unpacked weight of 50 pounds or less each).

(f) Safety and arming device.

(g) Incendiary destroyer.

(h) 40mm grenades for grenade launcher.

(i) Demolition kits.

(2) Ten pounds or more of explosives used in demolition operations (e.g., C-4; military dynamite, TNT, etc.).

(3) 100 or more blasting caps, detonators, destruction or firing devices, primers, squibs, and ignitors.

(4) 100 or more fuzes.

(5) 100 or more supplementary charges.

(6) 100 or more explosive bolts, explosive cartridges, and related devices.

(7) 50 pounds or more bulk explosives.

(8) 1000 feet or more detonating cord and safety fuse.

(9) Two or more riot control agents, 100-pound package or less.

(10) Two or more rounds of ammunition of 40mm and larger nonautomatic weapon.

(11) One or more artillery, naval, tank, and mortar ammunition, 75mm and larger.

(12) Ammunition for weapons in paragraph b above, not otherwise categorized.

(13) One box or more (normally 16 or more) grenades, illumination, smoke, and CS/CN (tear producing).

(14) End items of conventional and guided missile ammunition (except artillery rounds, bombs, and torpedoes) that:

(a) Have an individual item (for example, unit of issue) container or package weight of 60 pounds or less.

(b) Have potential use in civil disturbances.

(c) Are vulnerable to theft.

Appendix F

Specification for Intrusion Detection System Signs

F-1. A sample intrusion detection system sign that may be used is shown below in figure F-1. The sign is flat with shape, size, and legend as shown. The sign face should consist of reflectorized sheeting bonded to an aluminum backing.

F-2. Sign backing is flat, degreased, etched, and unpainted aluminum alloy, type 6061T6, not less than $\frac{1}{16}$ -inch thick. For interior posting, plastic or wood could be used.

F-3. In non-English speaking overseas areas, a sign in the language of the host country, should be mounted alongside the English language sign. In U.S. states and possessions where a major minority language is spoken, similar signs may be posted as a safety precaution.

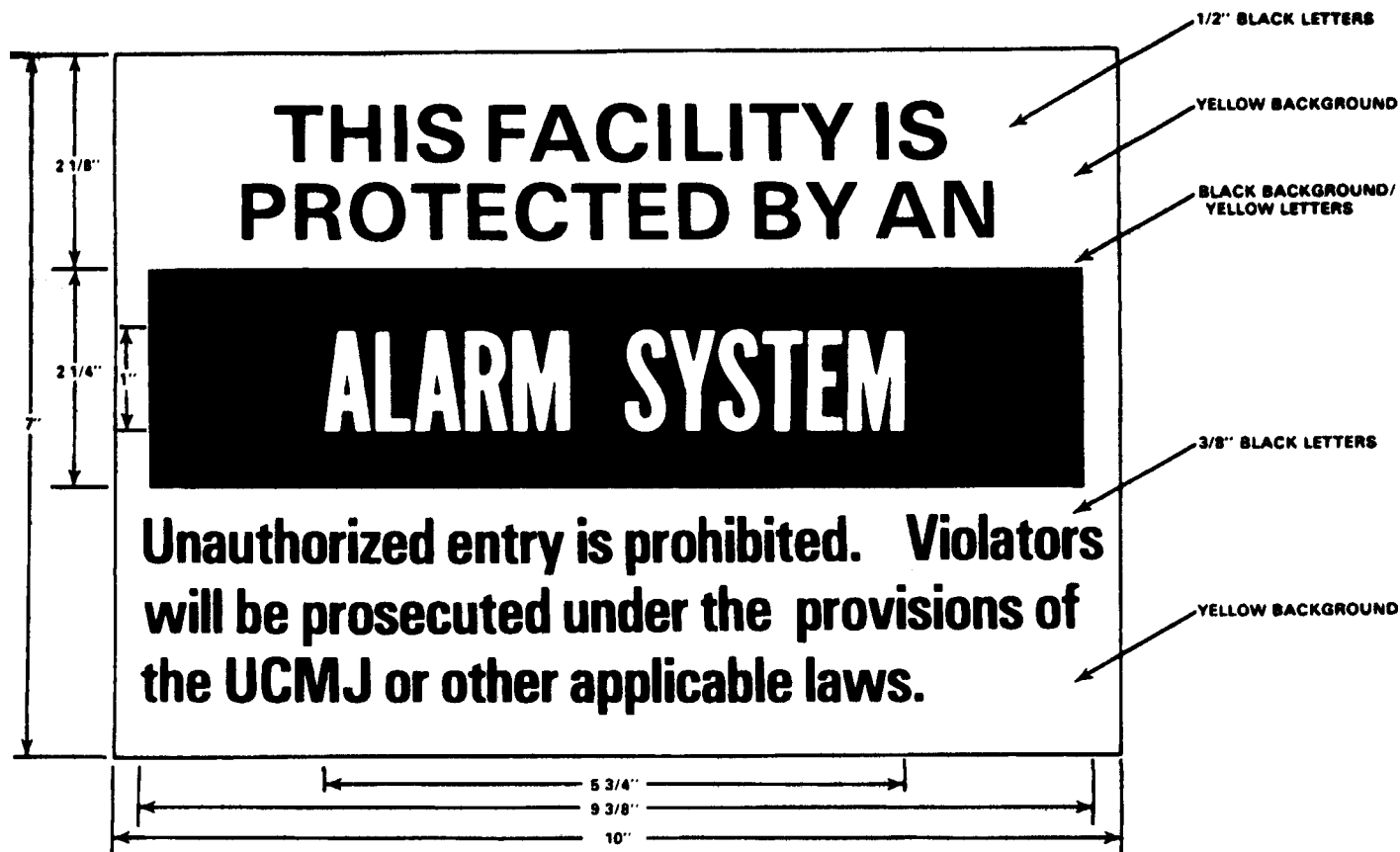


Figure F-1. Sample Intrusion Detection System Sign

Appendix G Criteria for Facilities Storing Sensitive AA&E

G-1. New facility criteria

If Category II arms are to be stored in new facilities built for the principal purpose of storing arms, the facilities will meet the following facility criteria.

a. Walls. Walls will consist of 8 inches of concrete reinforced with No. 4 reinforcing bars at 9 inches on center in each direction, or 8-inch concrete block with No. 4 bars threaded through direction, or 8-inch concrete block with No. 4 bars threaded through block cavities filled with mortar or concrete and with horizontal joint reinforcement at each course.

b. Ceilings and roofs. Reinforcing bar spacing shall form a grid so that the area of any opening does not exceed 96 square inches using No. 4 bars or larger. The ceiling or roof shall be of concrete construction. The thinnest portion may not be less than 6 inches.

c. Floors. Floors, if on grade, will be a minimum of 6 inches concrete construction reinforced with 6 inches by 6 inches—W4 by W4 mesh or equivalent bars. Where the floor slab acts as the ceiling of an under-lying room or area, the ceiling standards apply.

d. Doors. Doors will be constructed of 1 3/4-inch thick solid or laminated wood with 12-gauge steel plate on the outside face, or will be standard 1 3/4-inch thick, hollow metal, industrial-type construction with minimum 14 gauge skin plate thickness, internally reinforced vertically with continuous steel stiffeners spaced 6 inches maximum on center. Doors used for access to arms storage facilities will meet the above structural standards. Double door protection for arms storage facilities is not required. When double-door protection on existing facilities provides protection equivalent to that of doors constructed according to above standards, modification to meet that requirement will not be undertaken.

(1) Door bucks, frames, and keepers will be rigidly anchored and

provided with antispread space filler reinforced to prevent disengagement of the lock bolt by prying or jacking of the door frame. The frames and locks for both interior and exterior doors will be so designed and installed as to prevent sufficient removal of the frame facing or the built-in locking mechanism to allow disengagement of the lock bolt from outside a secured room when the door is closed and locked.

(2) Construction requirements for door frames and thresholds will be as exacting as those for the doors themselves. For example, where metal doors are used, the frame and thresholds will be of metal. A GSA approved class 5 armory door or GSA approved Class 5 vault door with a built-in, three-position, dial-type, changeable combination lock, may be used instead of other doors or locks.

(3) Various types of hinges are commercially available. When choosing the proper type of hinge for secure area doors, hinges will be of the fixed pin security hinge type or equivalent; exposed hinge pins will be pinned, spot welded, or otherwise secured to prevent removal; and hinge mounting screws may not be exposed to the outside of the arms room except for class 5 steel vault door hinges.

e. Windows and other openings. Windows and other openings will be sealed with material comparable to that forming the adjacent walls and otherwise limited to the minimum essential. Windows, ducts, vents, or similar openings of 96 square inches or more with the least dimension greater than 6 inches will be equipped with any of the following:

(1) Three-eighth inch or larger hardened steel bars, provided the vertical bars are not more than 4 inches apart with horizontal bars welded to the vertical bars so that the openings do not exceed 32 square inches.

(2) Number 8 gauge high carbon manganese steel mesh with 2-inch diamond grid.

(3) Number 6 gauge steel mesh with 2-inch diamond grid when number 8 in (2) above, is not available.

(4) Bars or steel mesh will be securely embedded in the structure of the building or welded to a steel frame that will be securely attached to the wall with fastenings inaccessible from the exterior of arms storage facility.

G-2. Criteria for facilities storing II through IV arms.

The following exceptions to the new facility criteria are permitted for storing Category II through IV arms in an existing facility located on or off a military installation.

a. Doors, windows and other openings.

(1) *Doors.* At a minimum, doors shall be constructed of 1 3/4-inch thick, solid, core wood with wood block cores on 1 3/4-inch thick hollow metal, with minimum 16-gauge skin plate thickness.

(a) Door frames will be a minimum of 16 gauge steel.

(b) Door hinges shall not be exposed to the outside of the arms storage area and hinge pins shall be secured to prevent removal.

(c) Doors shall be secured with authorized padlocks.

(2) *Windows and other openings.* Windows and other openings shall be kept to a minimum. When provided, windows and other openings will be secured as required in paragraph G-1e.

b. Walls, ceilings, roofs, and floors. Walls of existing 8-inch reinforced solid brick, 8-inch reinforced concrete block with voids filled with concrete, or 12-inch nonreinforced solid brick. Ceilings, roofs, and floors of existing facilities will be reinforced concrete at a minimum, the thinnest portion may not be less than 6 inches. Ceilings, roofs, and floors of ARNGUS arms rooms, built prior to 1 January 1997, will be at least 5 inches at the thinnest portion. Walls, ceilings, roofs, and floors that does not meet these structural criteria will be reinforced by one of the following methods:

(1) *Steel bars.* Three-eighth inch steel bars, 4 inches apart with horizontal bars welded to the vertical bars so that the openings do not exceed 32 square inches. Ends of the steel bars will be embedded securely in the structure of the building or welded to a steel frame securely fastened to the building.

(2) *Steel landing mat.* Marsten, Irving, or pierced steel planking.

(3) *Expanded metal.* Three-sixteenth-inch with a maximum grid opening of 1-inch by 3-inches and weighing a minimum of 4.27 pounds according to square foot.

(4) *Steel plate.* One-fourth-inch steel plate.

(5) *Steel mesh.* Number 8-gauge high carbon manganese steel, or for existing facilities, number 6-gauge cold drawn steel wire with a grid of not more than 2 inches center to center. The number 6-gauge material is not authorized for future upgrading.

(6) *Sheet metal.* For existing facilities, 16-gauge steel sheets or plates securely fastened together. This material is not authorized for future upgrading.

(7) *Reinforcing materials.* When the above reinforcing materials are used, they will be applied and fastened to the existing structure so that destruction of the existing and reinforcing materials is required to remove them.

c. Doors, windows, and other openings. At a minimum, doors will be constructed of 1 3/4-inch thick, solid, or laminated wood, or be of standard 1 3/4-inch thick hollow metal, industrial type construction with minimum 16-gauge skin plate thickness. At a minimum, windows and other openings will be constructed to provide equivalent penetration resistance as that provided by the walls.

d. Other. All other criteria listed in paragraph G-1 for new facilities will apply for facilities storing Category III arms.

G-3. Rescinded

Appendix H Physical Security Standards for DOD AA&E at Contractor-owned, Contractor-operated (COCO) Facilities (Extracted from DOD 5100.76-M)

A. Security Criteria

The following security criteria apply to AA&E in appendix B.

1. Accountability. The contractor shall be required to:

(a) Have or establish an accountability system for both explosive components and end items produced under a DOD contract, or furnished or released to a contractor by the Department of Defense. The records kept under the system shall reflect nomenclature and serial number; amounts produced, shipped, and on hand; and the location of explosive components and end items.

(b) Review accountability records and conduct quarterly inventories where bulk storage is involved. The contractor shall inventory uncrated items and items in unsealed crates by serial number, and sealed crated arms by counting of sealed crates and containers. At facilities where weapons are tested, there shall be daily inventories of weapons drawn from storage for testing purposes.

(c) Dispose of residual material in accordance with the instructions of the government contracting officer and DOD 4160.21-M-1 (reference (o)).

2. Security. The contractor shall be required to provide a security system which includes the following:

(a) *Isolated Area.* Risk category AA&E storage areas in an isolated area not under constant surveillance shall be physically checked on a random basis not less than once every four hours.

(b) *Perimeter Control.* Provide perimeter control through the application of procedures and barriers to ensure that unauthorized individuals are unable to enter sensitive areas.

(c) *Entry Control.* Provide positive access control through the application of equipment and procedures to ensure the following objectives are met:

(1) Limit access to authorized personnel.

(2) Require identification prior to entry.

(3) Require an established need for access.

(d) *Lighting.* Provide production and storage area exterior lighting of sufficient intensity for guards or other personnel in the area to recognize illegal or unauthorized activities. Locations appropriate for lighting include perimeters and entrances to storage areas, buildings, and corridors. Light switches on the outside of buildings shall be secured or inaccessible to unauthorized persons.

(e) *Facility Construction.* Construct facilities for unattended storage of sensitive AA&E as prescribed in attachments 1, 2, and 3 as applicable. Use Military Handbook MIL-HDBK 1013/1 (reference (t)) or other appropriate DOD security engineering guidelines for information.

(f) *Key and Lock Control.* Establish key and lock control systems that are compatible with the guidelines provided in chapter 3, section H of this Manual except that completed key control registers shall be kept on file for 180 days and inventory records shall be kept on file for two years. Records shall be disposed of in accordance with government contracting officer's instructions.

(g) *Response Force.* Provide an armed patrol capable of investigating local threats and which is available to respond to the detection of intruder(s). This force may include or consist entirely of local, state and/or federal law enforcement agencies; however, prior agreements or arrangements must be documented and coordinated as appropriate. Such agreements or arrangements must be kept current.

(h) *Additional Security Measures.* Review weapon system production lines before operations to identify potential diversion risks or pilferable items which may require adjunctive physical security measures to prevent theft. The identified vulnerabilities and implemented physical security measures shall be incorporated into the contractor's security procedures and be available for government review. Measures may include:

- (1) Additional barriers.
- (2) Use of metal detectors at exit control points.
- (3) Separation of privately-owned vehicle parking from the production area, shipping and receiving areas, and refuse containers.
- (4) Internal surveillance using closed circuit television.
- (5) A determination must be made where and at what point in the production process a weapon should be protected as a risk category item. During periods when the production line is unattended weapons must be removed to storage areas, or the production line must be protected.

(i) *Classified AA&E.* Contractors manufacturing, storing, transporting, or otherwise holding classified AA&E will be cleared in accordance with reference(s).

3. *Storage Areas.* The contractor will be required to ensure the facilities in which AA&E are located during nonworking hours or while unattended for extended periods of time are:

(a) Constructed to meet the requirements of this appendix with appropriate attachments. In contractor facilities where 30 or fewer arms are located, a class 5 safe or safe-type steel file container with built-in Group IR changeable combination lock may be used for storage. Such containers will provide forced entry protection as specified by GSA, or burglar resistance as listed by the Underwriters Laboratories (UL). Containers meeting UL certification for Class TL-15 may be used instead of GSA-approved class 5 containers.

(b) Protected by:

- (1) A security force available within 15 minutes of notification.
- (2) Intrusion detection system (IDS). This applies to all storage facilities containing sensitive arms, regardless of risk category, and Categories I and II nonnuclear missiles, rockets, ammunition and explosives.

(3) Constant surveillance if an operational IDS is not present. This applies to Categories I and II AA&E.

(4) Patrol checks by a security force at random intervals at least every 8 hours when IDS is present. This applies to Categories I and II AA&E. Patrol checks are not required for Categories III and IV AA&E storage protected by an operational IDS.

4. *Intrusion Detection Systems.*

(a) All materials and equipment used in the IDS must meet the criteria prescribed in UL Standards for Intrusion Detection Units, UL-639, and be listed with the UL. A list of manufacturers of UL Listed IDS equipment can be found in the UL Automobile, Burglary Protection, and Mechanical Equipment Directory under Intrusion Detection Units (ANSR). Copies of the directory may be obtained from Underwriters Laboratories, Inc., Publication Stock, 333 Pfingsten Road, Northbrook, IL 60062.

(b) All material and equipment used for the IDS will be installed in accordance with the criteria established for Extent No. 3 in the UL Standards for Installation and Classification of Mercantile Bank Burglar Alarm Systems, UL-681.

(c) The construction, performance and operation of equipment intended for the use in proprietary systems must be in accordance with the criteria established for Grade AA and Installation No. 3 systems in UL Standards for Proprietary Burglar Alarm Units and Systems, UL-1076. A list of UL Listed manufacturers who install proprietary systems can be found in the UL Automotive, Burglary Protection, and Mechanical Equipment Directory under Proprietary Alarm Systems (CVWX).

(d) The operation of electrical protection circuits and devices that are signaled automatically, recorded in, maintained in, and supervised from a central station having trained operators and alarm investigators in attendance at all times must be in accordance with the criteria established for Grade AA and Installation No. 3 systems in UL Standards for Control-Station, Burglar Alarm Systems, UL-611. Available UL certified central control stations can be located in the UL Automotive, Burglary Protection, and Mechanical Equipment Directory under Central Station (CPVX).

(e) IDS must be tested monthly and records maintained of these tests.

B. Incident Reports

Contractors are required to report all losses and thefts of Risk Category AA&E to the DIS cognizant industrial security office no later than 72 hours after initial discovery. Similar information should also be given to the FBI and DOD Component Major Command. Local law enforcement agencies will be notified.

C. Security Procedures

The contractor will be required to develop written procedures designed to ensure compliance with the physical security standards of this appendix. The procedures shall be available at the contractor's facility for review by Government representatives.

D. Security Surveys and Inspections

To ensure that a prospective contractor will satisfy physical security requirements of this appendix, a preaward security survey may be performed by government contracting agency security personnel. Regardless of whether such a preaward survey is conducted, security inspections will be performed by the DIS cognizant industrial security office at recurring 18 month intervals during the period of the contract to ensure compliance with this appendix.

E. Waivers

Requests for waivers to the DOD security requirements of this manual shall be submitted, in writing, by the contractor to the government procurement contracting officer who shall coordinate such requests with the DIS Cognizant Security Office. Requests for waivers with recommendations shall be forwarded to the DOD Component Major Command for decision. Waivers normally may be granted for a period of 1 year and may be extended only after a review of circumstances necessitating an extension. Each extension shall state first extension, second extension, etc. Requests for waivers shall include a statement as to why the contractor is unable to meet requirements and outline compensatory measures proposed by the contractor to provide equivalent or better protection than the original standard. Copies of approved waivers shall be furnished to the applicable DIS Cognizant Security Office and DOD Component Major Command. Copies of approved waivers applying to commercial carrier's transportation minimum security standards with compensatory measures taken shall be forwarded to the Commander, Military Traffic Management Command, ATTN: MT-IN, Washington, DC 20315.

F. Exceptions

Requests for exceptions to the DOD security requirements of this manual shall be submitted, in writing, by the contractor to the Government procurement contracting officer who shall coordinate such requests with the DIS Cognizant Security Office. Requests for exceptions with recommendations shall be forwarded to the DOD component Major Command for decision. Requests for exceptions shall include a statement as to why the contractor is unable to meet the requirements and compensatory or equivalent protection measures proposed by the contractor to provided comparable security.

Attachments

1. Category I and II Nonnuclear Missiles, Rockets, Ammunition and Explosives — Storage.
2. Category II Arms — Storage.
3. Category III and IV Arms, Ammunition and Explosives — Storage.
4. Arms Parts — Storage.
5. Significant Incidents Pertaining to Arms, Ammunition and Explosives.
6. Cognizant DIS Industrial Security Offices

ATTACHMENT 1 CATEGORY I AND II NONNUCLEAR MISSILES, ROCKETS, AMMUNITION, AND EXPLOSIVES — STORAGE

A. New Construction

1. AA&E listed under Category I and II shall be stored in structures meeting construction requirements as specified in DOD 6055.9-STD (reference (g) or DOD 4145.26-M (reference (u)). Determinations of the suitability of new structures will be provided to the DIS cognizant security office by the DOD Component Major Command.

2. Storage areas shall be surrounded with chain link security fencing approved by the DOD Component Major Command. Minimum height of fencing shall be 6 feet.

3. Locks.

a. Doors shall be secured by a high security padlock (military specification MIL-P-43607G) and hasp (military specification MIL-H-43905B or H-29181/1 (YD)), or other comparable hasps and locking hardware approved by the DOD Component Major Command. Component approved hasps and locks shall be specified in the contract. Storage facilities equipped with a Class 5 GSA-approved steel vault door with a group 1R changeable combination lock, are authorized instead of other doors and locks. Doors that cannot be secured from the inside with locking bars or deadbolts shall be secured on the inside with padlocks which meet or exceed military specification MIL-P-17802D (Grade II, Class 1, Type A). Panic hardware, when required, shall be so installed as to prevent opening the door by manipulation from the outside. Panic hardware will be secured after close down and freed prior to facility occupancy by means which are acceptable to safety officials.

b. A Class 5 steel vault door with a built-in, group 1R changeable combination lock, or key operated high security padlock and hasp (above military specifications), shall be used on doors to structures housing classified AA&E.

B. Existing Construction

The DOD Component Major Command may permit storage of Category I and II items in existing types of structures if, in the opinion of the Major Command, equivalent security is provided and all other security requirements are met. Determinations of the suitability of existing structures will be provided to the DIS Cognizant Security Office by the DOD Component Major Command.

ATTACHMENT 2

CATEGORY II ARMS — STORAGE

A. New Construction

1. Category II arms shall be stored in facilities meeting the following design criteria:

a. *Walls.* Walls shall consist of 8 inches of concrete reinforced with No. 4 reinforcing bars at 9 inches on center in each direction and staggered on each face to form a grid approximately 4½ inches square, 8 inch concrete block with No. 4 bars threaded through block cavities filled with mortar or concrete and with horizontal joint reinforcement at every course, or at least 8 inches of brick interlocked between inner and outer courses.

b. *Ceilings and Roofs.* Reinforcing bar spacing shall form a grid so that the area of any opening does not exceed 96 square inches, using No. 4 bars or larger. If the ceiling or roof is of concrete pan-joint construction, the thinnest portion may not be less than 6 inches and the clear space between joints may not exceed 20 inches; the reinforcing grid requirements for flat slab construction also apply.

c. *Floors.* Floors, if on grade, shall be a minimum of 6 inch reinforced concrete construction. Where the floor slab acts as the ceiling of an underlying room or area, the ceiling standards apply.

d. Doors.

(1) Doors shall be constructed of 1¾-inch thick solid or laminated wood with 12-gauge steel plate on the outside face, or shall be of standard 1¾-inch thick, hollow metal, industrial-type construction with minimum 14 gauge skin plate thickness, internally

reinforced vertically with continuous steel stiffeners spaced 6 inches maximum on center.

(a) Door bucks, frames, and keepers shall be rigidly anchored and provided with antispread space filler reinforcement to prevent disengagement of the lock bolt by prying or jacking of the door frames. The frames and locks for both interior and exterior doors shall be so designed and installed as to prevent sufficient removal of the frame facing or the built-in locking mechanism to allow disengagement of the lock from outside a secured room when the door is closed and locked.

(b) Construction requirements for door frames and thresholds shall be as stringent as those for the doors themselves. For example, where metal doors are used, the frame and thresholds shall be of metal. A class 5 steel vault door with a built-in, group 1R changeable combination lock may be used instead of other doors or locks.

(c) Various type of security hinges are available commercially. Hinges shall be of the fixed pin security hinge type or equivalent; exposed hinge pins shall be pinned, spot welded, or otherwise secured to prevent removal; and hinge mounting screws may not be exposed to the outside of the room.

e. Windows and Other Openings

(1) Window and other openings shall be sealed with material comparable to that forming the adjacent walls and otherwise limited to the minimum essential. Windows, ducts, vents, or similar opening of 96 square inches or more with the least dimension greater than 6 inches shall be equipped with one of the following:

(a) Three-eighth inch or larger hardened steel bars, provided the vertical bars are not more than 4 inches apart with horizontal bars welded to the vertical bars so that the openings do not exceed 32 square inches.

(b) Number 8 gauge high carbon manganese steel mesh with 2 inch diamond grid.

(c) Number 6 gauge steel mesh with 2 inch diamond grid when number 8 in subparagraph B.1.b(5), below, is not available.

(2) Bars or steel mesh shall be securely embedded in the structure of the building or welded to a steel frame that shall be securely attached to the wall with fastenings inaccessible from the exterior of the arms storage facility.

f. Locks.

(1) Access doors shall be secured by a high security padlock (military specification MIL-P-43607G) and hasp (military specification MIL-H-43905B or MIL-H-29181/1 (YD)), or other comparable hasps and locking hardware approved by the DOD Component Major Command. Approved locks and hasps will be specified in the contract. Storage facilities equipped with a class 5 GSA approved steel vault door with a built-in group 1R changeable combination lock are authorized in lieu of other doors and locks. Doors that cannot be secured from the inside with locking bars or deadbolts shall be secured on the inside with padlocks which meet or exceed military specification MIL-P-17802D. Panic hardware, when required, shall be installed to prevent opening the door by manipulation from the outside.

(2) A class 5 steel vault door with a built-in group 1R changeable combination lock or a key operated high security lock and hasp (above military specifications) shall be used on doors to structures housing classified AA&E.

B. Existing Construction

1. Existing facilities may be used for new contracts provided they meet the criteria indicated below and if determined by the DOD Component Major Command to be adequate. Determinations will be provided to the DIS Cognizant Security Office. The requirements for doors, windows and other openings and locks as prescribed in paragraphs A.1.d., e., and f., above, must be met at all times.

a. Walls of existing facilities at a minimum shall be 8 inch reinforced solid brick, 8 inch reinforced concrete block with voids filled with concrete, or 12 inch nonreinforced solid brick. Ceilings, roofs and floors of existing facilities shall be reinforced concrete at a minimum.

b. Walls, ceilings, roofs and floors that do not meet the structural

criteria in subsection A.1., above shall be reinforced by one of the following methods.

(1) *Steel Bars.* Three-eighth inch diameter steel bars, four inches apart with horizontal bars welded to the vertical bars so that openings do not exceed 32 square inches. Ends of the steel bars shall be embedded securely in the structure of the building or welded to a steel frame securely fastened to the building.

(2) *Steel Landing.* Marsten, Irving or pierced steel planking.

(3) *Expanded Metal.* Three-sixteenth inch with a maximum grid opening of 1 inch by 3 inches and weighing a minimum of 4.27 pounds per square foot.

(4) *Steel Plate.* One-fourth inch steel plate.

(5) *Steel Mesh.* Number 8 gauge high carbon manganese steel, or for existing facilities, number 6 gauge cold drawn steel wire with a grid of not more than 2 inches, center to center. Number 6 gauge cold drawn steel wire is not authorized for future upgrading.

(6) *Sheet Metal.* Sixteen gauge steel sheets or plates securely fastened. This material is not authorized for future upgrading.

(7) *Other Materials.* Other materials approved by the DOD Component Major Command concerned that provide protection equivalent to the methods mentioned in paragraph B.1.b above.

2. When the above reinforcing materials are used, they shall be applied and fastened to the existing structure so that destruction of the existing structure is required to remove them.

ATTACHMENT 3 CATEGORY III AND IV ARMS, AMMUNITION, AND EXPLOSIVES — STORAGE

A. New Construction

1. AA&E listed under Category III and IV shall be stored in structures meeting construction requirements as specified in DOD 6055.9-STD (reference (g)) or DOD 4145.26-M (reference (u)). Determinations of suitability of new structures will be provided to the DIS Cognizant Security Office by the DOD component major command.

2. When operational requirements make it necessary, a Type 2 outdoor magazine (see Title 18, USC, 842(J) (27 CFR, 55, subpart K, sections 207 and 208) (reference (v))) is suitable for storing Category III and IV AA&E (see section C below) with approved DOD locking systems.

B. Existing Construction

The DOD component major command may permit storage of Category III and IV items in existing types of structures, if equivalent security is provided by the contractor and all other security requirements are met. Determinations of suitability of existing structures will be provided to the DIS Cognizant Security Office by the DOD component major command.

C. Type 2 Magazine Standards

1. A Type 2 magazine is a box, trailer, semitrailer, or other mobile facility, described as follows:

a. General. Outdoor magazines are to be bullet-resistant, fire-resistant, weather-resistant, theft-resistant, and ventilated. They are to be supported to prevent direct contact with the ground and, if less than one cubic yard in size, must be securely fastened to a fixed object. The ground around outdoor magazines must slope away for draining or other adequate draining provided. When unattended, vehicular magazines must have wheels removed or otherwise effectively immobilized by kingpin locking devices or other methods approved by the DOD Component Major Command.

b. Exterior Construction. The exterior and doors are to be constructed of not less than ¼ inch steel and lined with at least 2 inches of hardwood. Magazines with top openings will have lids with water-resistant seals or which overlap the sides by at least 1 inch when in closed position. (Doors, shall be in secured by a high security padlock (military specification MIL-H-43607G) and hasp (military specification MIL-H-430905B or MIL-H-219181/1 (YD)) with hinge side protection or other comparable locking system ap-

proved by the DOD component).

ATTACHMENT 4 ARMS PARTS—STORAGE

Major parts for arms, such as barrels and major subassemblies, shall be afforded at least the same protection as Category IV arms. The frame or receiver of an arm constitutes a weapon and such parts, therefore, must be stored according to the correct category; for example, the receiver of a .30 caliber machine gun shall be stored as a Category II arm.

ATTACHMENT 5 SIGNIFICANT INCIDENTS PERTAINING TO ARMS, AMMUNITION, AND EXPLOSIVES

Any armed robbery or attempted armed robbery; forced entry or attempted forced entry with physical evidence of the attempt; evidence of terrorist involvement; or illegal trafficking in sensitive AA&E shall be reported in accordance with the provisions of this appendix within 72 hours. In addition, the loss or theft of the following AA&E shall be reported:

- a.* Any missile or rocket.
- b.* Any machine gun.
- c.* Any antipersonnel or antitank mine.
- d.* Any automatic fire weapon.
- e.* Twenty-five or more manually operated weapons.
- f.* Demolition charges, blocks of explosives, and other explosives having a net weight of 100 pounds or more.
- g.* Ammunition
 1. Twenty thousand rounds or more of shotgun, .38 or .22 caliber ammunition, and 5,000 rounds or more of other .50 caliber or smaller ammunition.
 2. Five rounds or more of nonautomatic weapon ammunition larger than .50 caliber.
 3. One thousand rounds or more of automatic weapon ammunition larger than .50 caliber.
 4. Any fragmentation, concussion, or high explosive grenade.

ATTACHMENT 6 COGNIZANT DIS INDUSTRIAL SECURITY OFFICES

New England Region:

Defense Investigation Service
Director of Industrial Security
New England Region (S1110)
Barnes Building
495 Summer Street
Boston, MA 02210-2192
Phone: Commercial: (617) 451-4914/6; DSN: 955-4914/6

Mid-Atlantic Region:

Defense Investigative Service
Director of Industrial Security
Mid-Atlantic Region (S1410)
Cherry Hill Office Center
1040 Kings Highway North
Cherry Hill, NJ 08034-1908
Phone: Commercial: (609) 482-6500; DSN: 444-4030

Capital Region:

Defense Investigative Service
Director of Industrial Security
Capital Region (S1510)
Hoffman Building #1
2461 Eisenhower Avenue
Alexandria, VA 22331-1000

Phone: Commercial: (202) 325-9634; DSN: 221-9634

Mid-Western Region:

Defense Investigative Service

Director of Industrial Security

Mid-Western Region (S3210)

610 S. Canal Street, Room 908

Chicago, IL 60607-4877

Phone: Commercial: (312) 886-5244

Southeastern Region:

Defense Investigative Service

Director of Industrial Security

Southeastern Region (S4110)

2300 Lake Park Drive, Suite 250

Smyrna, GA 30080-7606

Phone: Commercial: (404) 432-0826

Pacific Region:

Defense Investigative Service

Director of Industrial Security

Pacific Region (S5310)

3605 Long Beach Blvd., Suite 405

Long Beach, CA 90807-4013

Phone: Commercial: (213) 595-7251

Northwestern Region

Defense Investigative Service

Director of Industrial Security

Northwestern Region (S5210)

Presidio of San Francisco

San Francisco, CA 94129-7700

Phone: Commercial: (415) 561-3251/6; DSN: 586-3251/6

Southwestern Region:

Defense Investigative Service

Director of Industrial Security

Southwestern Region (S4210)

P.O. Box 88900

St. Louis, MO 63188-1900

Phone: Commercial: (314) 263-6580; DSN: 693-6580

**Appendix I
Enhanced Transportation Security Measures During
Terrorist Threat Conditions (Extracted from DOD
5100.76-M)**

I-1. This appendix prescribes specific additional transportation security measures for use in shipments to and from activities affected by or under terrorist threat conditions (THREATCONS). This guidance applies to all DOD activities that ship sensitive conventional AA&E, classified AA&E, or uncategorized Class A or B ammunition and explosives in the areas under THREATCONS. Detailed requirements shall be outlined in Service implementing instructions.

I-2. Actions

a. Implementation of each successive threat condition shall include the use of appropriate measures from the preceding condition.

(1) *THREATCON ALFA* (Lowest *THREATCON*). General threat

of possible terrorist activity against installations and personnel, nature and extent unpredictable. The measures in this threat condition must be capable of being maintained indefinitely.

(a) Conduct daily liaison with supporting intelligence and security organizations, in accordance with Service implementing instructions, to review specific local threat conditions.

(b) Convene a special meeting of the installation physical security council, to review the threat situation. Provide recommended actions to the installation commander.

(2) *THREATCON BRAVO*. (Increased and more predictable threat of terrorist activity exists. The measures in this *THREATCON* must be capable of being maintained for weeks without undue hardship.)

(a) Postpone nonessential surface shipments of risk Categories I, II and all classified AA&E, or ship by military air, if feasible.

(b) Commence use of Security Escort Vehicle Service (SEVS) for all risk Category II and classified AA&E shipments.

(c) Plan possible overtime requirements for anticipated increased use of installation as DOD "Safe Haven," if applicable.

(d) In order to ensure the availability of sufficient "Safe Haven" areas, clear all holding yards and other temporary storage areas of sensitive conventional AA&E, classified ordnance, and uncategorized Class A or B ammunition and explosives by relocating material to permanent, secure storage to the maximum extent practicable. Additionally, consider shipping uncategorized and unclassified AA&E to ultimate destination.

(e) Review security facilities such as fencing, lighting, and communications equipment for all AA&E holding yards and other temporary storage areas.

(3) *THREATCON CHARLIE*. (Terrorist incident occurs or intelligence is received indicating action against installations or personnel is imminent. Implementation of these measures for more than a short time will probably create hardship and affect peacetime activities of unit and its personnel.)

(a) Require armed military escort in separate vehicles for all risk Categories I, II and classified AA&E shipments in lieu of commercial SEVs.

(b) Increase operations security of risk Category I shipments by sending at least one vehicle with a "decoy load" for each vehicle that carries actual risk Category I AA&E. The characteristics of the "decoy load" must duplicate those of the actual shipment to the maximum extent practicable.

(c) Direct truck shipments to stop only at DOD approved "Safe Havens." The only exceptions shall be for food, fuel, or Motor Surveillance Service (MSS) reports. Such stops must not exceed 30 minutes in duration.

(d) Require MSS at 4-hour intervals for all risk Categories I and II and classified AA&E, and at 8-hour intervals for risk Categories III and IV and all uncategorized Class A and B ammunition and explosive shipments.

(e) Require single line haul and exclusive use of vehicle, dromedary, or approved container for all sensitive conventional AA&E, all classified AA&E, and all uncategorized Class A and B ammunition and explosive shipments.

(f) Conduct liaison with state and local law enforcement prior to any shipment of Categories I, II and classified AA&E to discuss support requirements, schedules, routes, and other information of mutual concern.

(g) Verify the seal serial numbers for all vehicles and other containers with classified AA&E and risk Categories I and II material in holding yards at least once every 4 hours. Seal serial number for risk Categories III and IV and all uncategorized Class A and B ammunition and explosives must be verified at least once every 8 hours.

(4) *THREATCON DELTA*. (Highest *THREATCON*. Applies in immediate area where terrorist attack has occurred or is expected against a specific installation. Normally this *THREATCON* is declared as a localized warning.)

(a) Temporarily suspend AA&E shipments in and out of the local area except for those needed to meet critical operational requirements.

(b) For shipments deemed critical, ship by military air, if feasible. Provide military transport and drivers with armed military escort in separate vehicles for all sensitive conventional AA&E, classified AA&E, and uncategorized Class A and B ammunition and explosives.

Appendix J Arms, Ammunition, and Explosives Guidesheet

J-1. Application.

This appendix provides a guidesheet that may be used to quickly check for compliance with physical security requirements. The guidesheet—

- a. Is not intended to be used in place of applicable regulations.
- b. Is only a guide.
- c. Does not cover all security requirements for AA&E.

J-2. Physical Security Compliance

Location:

Unit:

Date:

a. Arms room

(1) Was the arms storage facility designated as a mission essential/vulnerable area (AR 190-13, para 2-4d(1))?

(2) Was the storage facility wherein arms were stored, designated and posted as a restricted area (AR 190-11, para 4-15 and AR 190-13, para 6-3 and 6-4)?

(3) Was security lighting at the entrance or issue window of the arms room (AR 190-11, para 4-2d)?

(4) Were switches for exterior lights located in such a place as to be inaccessible to unauthorized personnel (AR 190-11, para 4-2d(4))?

(5) Was the most secured door to the arms storage facility secured with a high security padlock and hasp (AR 190-11, para 4-2e(1))?

(6) Did the arms room maintaining IDS have signs displaying the fact that IDS was present (AR 190-11, para 4-16)?

(7) Were physical security inspections conducted at least every 18 months (AR 190-11, para 2-6a; and AR 190-13, para 2-11b)?

(8) Was the arms room, not continuously manned or under constant surveillance, protected by IDS (AR 190-11, para 4-2f)?

(9) Was the arms room protected by at least two types of sensors, one of which is a volumetric sensor (AR 190-11, para 36a)? (Have armorer conduct test.)

(10) Were bimonthly operational checks to IDS being conducted and recorded. (AR 190-11, para 3-6h(6)(a))?

(11) Check the IDS agreement. Does it require either a response by security personnel or law enforcement authorities to respond within 15 minutes (AR 190-11, 3-6a&d)?

(12) Have qualified engineer personnel verified the structural composition of the arms room on DA Form 4604-R, Security Construction Statement, indicating thereon the highest construction Category met (AR 190-11, para 2-2d)?

(13) Is the AA&E storage facility approved for the storage of the highest category of AA&E stored therein? If not, has a waiver been approved (AR 190-11, para 4-2(a)(2))?

(14) Was DA Form 4604-R, Security Construction Statement, posted in each AA&E storage facility and readily available for inspection (AR 190-11, para 2-2d)?

(15) Was DA Form 4604-R, Security Construction Statement, revalidated by qualified engineer personnel at least every five years (AR 190-11, para 2-2d)?

(16) In the arms room, a facility not continuously manned, were weapons stored in racks/containers weighing more than 500 pounds or were the racks/containers fastened to the structure or fastened together in groups totaling more than 500 pounds (AR 190-11, para 4-2c(2))?

(17) Were locally fabricated racks in use certified by engineers as meeting construction specifications (AR 190-11, para 4-2c(3))?

(18) Was ammunition authorized for retention in the unit arms room stored separately in banded or sealed cartons or locked containers (AR 190-11, para 5-8c(1)(a))?

(19) Were ammunition containers in the unit arms room weighing less than 500 pounds fastened to the structure or fastened together, with bolts or chains equipped with secondary padlocks, in groups totaling more than 500 pounds (AR 190-11, para 5-8c(1)(a))?

(20) Were weapons stored in the arms room inventoried by serial number monthly (AR 190-11, para 2-6d; AR 710-2, para 1-13d, para 2-12d, and table 2-1, para j; and DA Pam 710-2-1, para 9-11b)? As part of this inspection, check physical count of M-16 rifles with the armorer's hand receipt. If the count is off, conduct a 100% inventory of the weapons.

(21) Had the same individual conducted consecutive inventories of weapons (AR 190-11, para 2-6d; AR 710-2, para 1-13d, 2-12d, and table 2-1, para j; and DA Pam 710-2-1, para 9-11b)?

(22) Did records of monthly inventories reflect those weapons that were signed out or in maintenance at the time of the inventories (AR 190-11, para 2-6d; AR 710-2, para 1-13d; and DA Pam 710-2-1, para 9-11b(4))?

(23) Were individuals drawing their weapons from the arms room turning in DA Form 3749 (AR 190-11, para 2-6d; AR 710-2, para 1-13d; and DA Pam 710-2-1, para 5-5d (3))?

(24) When weapons were issued for periods of 24 hours, did individuals—

(a) Enter their signature in ink, as it appeared on DA Form 3749, Equipment Receipt?

(b) Enter the nomenclature and serial number of the weapon drawn?

(c) Enter the date/time of the transaction on the issue sheet/log (AR 190-11, para 2-6d; AR 710-2, para 1-13d; and DA Pam 710-2-1)?

(25) When weapons were returned to the arms room, were entries on the issue sheet/log voided? Did the individual receiving the returned weapons enter the date/time, and his/her initials on the issue sheet/log (AR 190-11, para 2-6d; AR 710-2, para 1-13d; and DA Pam 710-2-1, para 5-5d(4))?

(26) Had individuals authorized unaccompanied access to receive, store, or issue arms, undergone a command security screening/background check (AR 190-11, para 2-11b and c and 4-19)?

(27) Had persons not authorized unaccompanied access to the arms room been allowed access to the IDS keys (AR 190-11, para 3-8b)?

(28) Is the unaccompanied access list (by name, duty position) signed by the unit commander and posted inside the arms room (AR 190-11, para 4-19a)?

(29) In the unit arms room, were privately-owned weapons or authorized war trophies stored in a locked container separate from military weapons (AR 190-11, para 4-5a(1))?

(30) In the unit arms room, were privately-owned weapons inventoried in conjunction with, and at the frequency of the inventory of Government weapons (AR 190-11, para 4-5a(2)(b))?

(31) Has a DA Form 3749 been issued for each privately owned weapon stored in the arms room (AR 190-11, para 4-5a(2)(a))?

(32) Is the DA Form 3749 retained in the arms room when the weapon is in the possession of the individual owner (AR 190-11, para 4-5b(3))?

(33) Are privately-owned weapons withdrawn from the unit arms room only upon approval of the unit commander or the commander's designated representative (AR 190-11, para 4-5b(4))?

(34) Are applicable local regulations and State and local law information on ownership, registration, and possession of weapons and ammunition posted on unit bulletin boards (AR 190-11, para 4-5a(3))?

(35) Is the retention and storage of incendiary devices and explosives prohibited in the unit arms room (AR 190-11, para 4-5a(6))?

b. Ammunition and explosives storage areas.

(1) Are Category I and II ammunition and explosives (A&E)

stored in earth-covered magazines and igloos (AR 190-11, para 5-2a (1))?

(2) Are Category I and II A&E protected by an intrusion detection system (IDS) (AR 190-11, para 5-2a(2a))?

(3) In the event of IDS failure, are armed guards posted 24 hours each day to maintain constant, unobstructed observation of the Category I and II storage facilities (AR 190-11, para 5-2a(2a))?

(4) Are security checks conducted once every 2 hours for IDS protected Category I and II facilities (AR 190-11, para 5-2a(2b))?

(5) Are security checks conducted at irregular hours not to exceed 48 hours for Category III and IV facilities (72 hours, IDS protected) (AR 190-11, para 5-2b)?

(6) Are Category I and II storage facility protected by security fencing (AR 190-11, para 5-3)?

(7) Are unmanned gates to A&E storage areas locked (AR 190-11, para 5-3g)?

(8) Do clear zones extend 12 feet on the outside and 30 feet on the inside of the perimeter fence for Category I and II A&E (para 5-3j)?

(9) Are clear zones for Category I and II free of all obstacles, topographical features and vegetation exceeding 8 inches in height (AR 190-11, para 5-3j)?

(10) Is security lighting provided for Category I and II storage facilities (AR 190-11, para 5-4)?

(a) Switches installed so that they are not accessible?

(b) Lights covered with wire mesh screen?

(11) Are the A&E storage facilities secured by a high security lock and hasp (AR 190-11, para 5-6a)?

(12) Upon entering and exiting A&E storage areas, are personnel and vehicles checked for unauthorized material (AR 190-11, para 5-9a)?

(13) Are Privately Owned Vehicles prohibited from A&E storage areas (AR 190-11, para 5-9a)?

(14) Are persons requiring frequent recurring entrance to A&E areas listed on an entry control roster or issued a photographic security badge (AR 190-11, para 5-9a)?

(15) Are doors used for access to Category I storage facilities locked with two locking devices, one of which is a high security lock and hasp (AR 190-11, para 5-6c)?

(16) Are Category I missiles and rockets stored in open storage (AR 190-11, para 5-8d)?

(17) When Category I missiles in open storage at vehicle holding areas, aircraft cargo holding areas, or unit storage, are they stored in an approved container or in a totally enclosed storage structure (AR 190-11, para 5-8)?

c. Key and lock control

(1) Are keys to arms storage buildings, rooms, racks, and containers maintained separately from other keys and accessible only to those individuals whose official duties require access to them (AR 190-11, para 3-8)?

(2) Is a current roster of these individuals kept within the unit (AR 190-11, para 3-8)?

(3) Is the key control register kept in a locked container (AR 190-11, para 3-8a)?

(4) Are padlocks and their keys inventoried by serial number semi-annually (AR 190-11, para 3-8e)?

(5) Are combinations to locks on vault doors or GSA approved Class 5 or Class 6 security containers changed annually or upon change of custodian or armorer (AR 190-11, para 3-8g)?

(6) Is the key and lock custodian appointed in writing (AR 190-11, para 3-8c)?

(7) Is the DA Form 5513-R (Key Control Register and Inventory) being utilized to sign out keys and is the form properly filled out (AR 190-11, para 3-8a)?

(8) Are keys required for the maintenance and repair of IDS,

including keys to the control unit door and monitor cabinet, kept separate from other operational IDS keys (AR 190-11, para 3-8b)?

Appendix K

Joint-Services Interior Intrusion Detection System (J-SIIDS) Operational Checks

K-1. (J-SIIDS) OPERATIONAL TEST

ARMS ROOM ID NUMBER:

DATE:

a. The following test procedures have been developed specifically for the Joint-Services Interior Intrusion Detection System (J-SIIDS) and are directly applicable for J-SIIDS installations. For installations having commercial intrusion detection systems, it may be necessary to modify these procedures to reflect differences in commercial equipment operation.

b. Follow the basic test procedure below for each protected area.

(1) Basic test procedure:

(a) Contact the MP Desk prior to conducting the operational tests. Identify yourself, your location (for example, Building name/number and room number), and the purpose of the test. Inform them that multiple alarms will be generated during the test.

(b) Before conducting the J-SIIDS operability tests, it will be necessary to close all doors and openings equipped with balanced magnetic switches and it will be necessary to mask ultrasonic motion sensors, passive infrared motion sensors, and passive ultrasonic sensors so the tester can test each individual sensor without generating unintentional alarms from the other sensors in the protected area. Close doors/drawers or otherwise secure protected objects equipped with the capacitance proximity sensor. Allow 1 minute for the system to stabilize.

(c) Set the control unit mode switch to the TEST/RESET position.

(d) Conduct J-SIIDS Operational Tests #1 - #6 for applicable sensors.

(e) Unmask all sensors.

(f) Contact the MP Desk. Identify yourself, your location (for example, Building name/number and room number). Verify that they received multiple alarms during the test period. If the protected area is equipped with an alarm latching switch which must be tested, inform the MP Desk that this test will be conducted. Place the control unit mode switch in the ACCESS position. Verify with the MP Desk that the zone status is ACCESS.

(g) Conduct J-SIIDS Operational Test #7 for the alarm latching switch (If so equipped).

(h) Contact MP Desk. Verify that the zone status is ACCESS. Inform them of test completion.

(2) Test/inspection guidesheet:

(a) THIS ARMS ROOM PASSED:

(b) THIS ARMS ROOM FAILED: (contact maintainer for service)

(c) TESTER NAME:

(d) SIGNATURE:

K-2. (J-SIIDS) OPERATIONAL TEST #1—BALANCED MAGNETIC SWITCH (BMS)

a. The balanced magnetic switch consists of a magnet assembly and a reed switch assembly enclosed in individual housings. The switch assembly is mounted to the moveable door or window. With the door or window closed, the magnet assembly acts on the switch assembly holding it closed to complete a circuit. When the door or window is opened, the magnet moves away from the switch releasing it. As the switch is released, it opens the circuit causing an alarm. Balanced magnetic switches are used to detect the opening and closing of doors, windows, skylights, and other similar moveable entry-ways.

b. TEST PROCEDURE:

(1) Verify the control unit mode switch is in the TEST/RESET position.

(2) With the door/window closed and locked, attempt to rattle or move the door/window. Alarm should not activate. If an audible signal initiates from the control unit, contact maintainer for adjustment.

(3) Slowly open the door, gate, or window. An audible alarm should initiate immediately from the control unit when the latching edge of the opening has moved not more than 1-1/4 inches from the closed position.

(4) Close the door, date, or window. After 10 seconds, the audible alarm will stop at the control unit.

(5) Repeat steps 2,3, and 4 for each BMS installed in the protected area.

c. TEST/INSPECTION GUIDESHEET:

(1) NUMBER OF BMS IN THIS ROOM:

(2) NUMBER OF BMS IN THIS ROOM PASSED:

(3) NUMBER OF BMS IN THIS ROOM FAILED (contact maintainer for service):

(4) TESTER NAME:

(5) SIGNATURE:

K-3. (J-SIIDS) Operational Test #2—CAPACITANCE PROXIMITY SENSOR (CPS)

a. The capacitance detection system establishes an electrical field around the protected objects, which must be metallic and insulated from ground. An intruder approaching or touching the protected object disturbs the field causing a change in system capacitance, resulting in an alarm.

b. TEST PROCEDURE:

(1) Verify the control unit mode switch is in the TEST/RESET position.

(2) Slowly approach the protected area. An audible alarm should sound at the control unit immediately either just prior, or as you touch the object.

(3) After the audible signal initiates, move away from the object. The control unit audible signal will stop within 1 minute.

(4) Repeat steps 2 and 3 for each protected object.

c. TEST/INSPECTION GUIDESHEET:

(1) NUMBER OF OBJECTS PROTECTED BY CPS IN THIS ROOM:

(2) NUMBER OF OBJECTS PROTECTED BY CPS IN THIS ROOM PASSED:

(3) NUMBER OF OBJECTS PROTECTED BY CPS IN THIS ROOM FAILED: (contact maintainer for service)

(4) TESTER NAME:

(5) SIGNATURE:

K-4. (J-SIIDS) OPERATIONAL CHECK #3—PASSIVE INFRARED MOTION SENSOR (PIMS)

a. All objects radiate infrared energy to some degree. The intensity of infrared energy emitted is dependent on the temperature, color, and surface texture of the object. Infrared energy is always present, and its intensity changes as the temperature of the object changes. The passive infrared motion detector is able to detect an intrusion because the entry of an intruder into the detection field abruptly changes the background level of infrared energy being sensed by the detector, and an alarm signal is generated.

b. TEST PROCEDURE:

(1) Verify the control unit mode switch is in the TEST/RESET position.

(2) Unmask the passive infrared motion sensor being tested.

(3) Allow one minute for system to stabilize.

(4) Conduct a walk test by beginning at a point outside the protected area or at the doorway to the protected area moving along likely intruder paths until audible alarm is activated at the control unit.

(5) Remask the sensor.

(6) Repeat steps 2, 3, 4 and 5 for each PIMS in the protected area.

c. TEST/INSPECTION GUIDESHEET:

(1) NUMBER OF PIMS IN THIS ROOM:

(2) NUMBER OF PIMS IN THIS ROOM PASSED:

(3) NUMBER OF PIMS IN THIS ROOM FAILED (contact maintainer for service):

(4) TESTER NAME:

(5) SIGNATURE:

K-5. (J-SIIDS) OPERATIONAL TEST #4—PASSIVE ULTRASONIC SENSOR (PUS)

a. The passive ultrasonic sensor is a microphonic type device which detects the ultrasonic energy frequencies produced by breaking construction materials such as wood, glass, masonry, cinder block, brick, or metals. Different structural materials transmit different specific frequencies, thus, the range, detection characteristics, and effectiveness are variable from surface to surface.

b. TEST PROCEDURE:

(1) Verify the control unit mode switch is in the TEST/RESET position.

(2) Unmask the passive ultrasonic sensor to be tested.

(3) Allow one minute for system to stabilize.

(4) Use a set of metallic keys (6 or more) on a ring to generate noise. Jingle the keys four to six times at 1-second intervals. Testing should take place along the walls or other protected surfaces where intrusion is likely, not in the middle of the room. At the end of the fourth to six jingle, an audible signal should initiate immediately at the control unit. The audible alarm will stop at the control unit 10 seconds after the sensor is out of alarm.

(5) Re-mask the sensor.

(6) Repeat steps 2, 3, 4, and 5 for each passive ultrasonic sensor in the protected area.

c. TEST/INSPECTION GUIDESHEET:

(1) NUMBER OF PUS IN THIS ROOM:

(2) NUMBER OF PUS IN THIS ROOM PASSED:

(3) NUMBER OF PUS IN THIS ROOM FAILED: (contact maintainer for service)

(4) TESTER NAME:

(5) SIGNATURE:

K-6. (J-SIIDS) OPERATIONAL TEST #5—VIBRATION SIGNAL DETECTOR (VSD)

a. Vibration signal detectors are typically mounted directly on expanded metal cages, walls, and ceilings. Attempts to penetrate structural materials generate shock waves which are transmitted through the structural material to the sensor. Different structural materials transmit different specific frequencies, thus, the range, detection characteristics, and effectiveness are variable from surface to surface.

b. TEST PROCEDURE:

(1) Verify the control unit mode switch is in the TEST/RESET position.

(2) Allow one minute for system to stabilize.

(3) Tap the protected surface with a solid object several times in succession. An audible signal should initiate from the control unit when the required number of taps or pulses have been received within the proper time interval. The audible signal will stop at the control unit 10 seconds after the detector is out of alarm.

(4) Repeat steps 2 and 3 for each vibration signal detector in the protected area.

c. TEST/INSPECTION CHECK LIST:

(1) NUMBER OF VSD IN THIS ROOM:

(2) NUMBER OF VSD IN THIS ROOM PASSED:

(3) NUMBER OF VSD IN THIS ROOM FAILED:(contact maintainer for service)

(4) TESTER NAME:

(5) SIGNATURE:

K-7. (J-SIIDS) OPERATIONAL TEST #6—ULTRASONIC MOTION SENSOR (UMS)

a. Ultrasonic motion detection operates on the Doppler frequency shift principle. A pattern of inaudible sound waves, generally in the 20 to 45 kHz range are transmitted into the room and monitored by the system receiver(s). Intruder motion within the room disturbs the

sound wave pattern, altering its frequency. The change in frequency or Doppler shift is detected and an alarm is generated.

b. Numerous configurations of the sensor and detection pattern are available, including wall mounts, ceiling mounts, and covert mounts where the sensor is disguised as an everyday office or home object. Sensors are available as transceivers where both transmitter and receiver are mounted in the same housing, or as “split head” systems where individual transmitters and receivers are utilized. The type and location of the transmitters and receivers determine the detection pattern and extent of coverage.

c. TEST PROCEDURE:

(1) Verify the control unit mode switch is in the TEST/RESET position.

(2) Unmask the ultrasonic motion sensor to be tested.

(3) Allow one minute for system to stabilize.

(4) Conduct a walk test by beginning a point outside the protected area or at the protected area boundary and moving along likely intruder paths until an audible signal is initiated at the control unit. The audible alarm will stop at the control unit 10 seconds after the sensor is out of alarm.

(5) Re-mask the sensor.

(6) Repeat steps 2, 3, 4, and 5 for each ultrasonic motion sensor installed in the protected area.

d. TEST/INSPECTION GUIDESHEET:

(1) NUMBER OF UMS IN THIS ROOM:

(2) NUMBER OF UMS IN THIS ROOM PASSED:

(3) NUMBER OF UMS IN THIS ROOM FAILED: (contact maintainer for service)

(4) TESTER NAME:

(5) SIGNATURE:

K-8. (J-SIIDS) OPERATIONAL CHECK #7—ALARM LATCHING SWITCH (ALS)

a. The alarm latching switch is incorporated into the intrusion detection system to provide individuals with a means of signaling, in a covert manner, that they have been placed under duress. Is intended to be foot operated and located in such a way that it can be easily reached and covertly operated during duty hours. For the protection of the user, the alarm latching switch must never annunciate in the area where they are located.

b. TEST PROCEDURE:

(1) Activate the alarm latching switch to be tested. Test should be accomplished with the control unit in the access position.

(2) Call the MP Desk and verify that they received an alarm from the zone under test. If no alarm was received, contact the maintainer for service.

(3) Reset the sensor by removing the switch cover and depressing the red reset switch. Install the cover.

(4) Reset the control unit by placing the control unit mode switch to the SECURE position momentarily and then setting the mode switch to the ACCESS position.

(5) Contact MP Desk and verify that the zone status is ACCESS.

(6) Repeat steps 1 through 5 for each alarm latching switch to be tested.

a. TEST/INSPECTION GUIDESHEET:

(1) NUMBER OF ALS IN THIS ROOM:

(2) NUMBER OF ALS IN THIS ROOM PASSED:

(3) NUMBER OF ALS IN THIS ROOM FAILED: (contact maintainer for service)

(4) TESTER NAME:

(5) SIGNATURE:

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RESERVED

SECURITY CONSTRUCTION STATEMENT

For use of this form, see AR 190-11; the proponent agency is ODCSOPS

INSTRUCTIONS

This form will be prepared in three copies. The original will be maintained permanently in the files of the individual signing the form. The first copy will be maintained permanently in the using unit/organizational files. The second copy will be filed permanently in the arms/ammunition storage facility. All entries except item 7 will be typewritten.

1. THE CONSTRUCTION OF THIS FACILITY CONFORMS TO THE CRITERIA OF AR 190-11 WHICH IS IN EFFECT ON THIS DATE EXCEPT AS INDICATED HEREON

2. ROOM AND BUILDING NUMBER, STREET AND INSTALLATION ADDRESS

3. THIS APPLIES TO

- a. ☐ AN EXISTING STRUCTURE
- b. ☐ CONSTRUCTION OF NEW FACILITY
- c. ☐ MODIFICATION OF EXISTING FACILITY (*Explain*)

4. NAME OF OFFICIAL SIGNING IN ITEM 7 BELOW

GRADE

6. ADDRESS OF OFFICIAL

5. ORGANIZATION

7. SIGNATURE

DATE SIGNED

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APPENDIX K

SPiRiT Requirements and Point Summary

Appendix K
Spirit Requirements and Summary Table

PAR	SPIRIT Requirements and Summary Table FEATURE	Maximum Points Possible	Mandatory Points in RFP	Proposal Points	REMARKS
1.R1	Sediment/Erosion Control Plan	R	R	R	RFP Requirement
1.C1	Avoid undesirable sites	1	0	0	
	Site adjacencies/compatibility	1	0	0	
1.C2	Increase density	1	0	0	
	Minimize new infrastructure	1	0	0	
1.C3	Brownfield	1	0	0	
1.C4	Proximity to transit systems	1	0	0	
	Bike racks & showers	1	0	0	
	Proximity to alternative fuel station	1	0	0	
	Parking capacity, carpool parking	1	0	0	
1.C5	Limited site disturbance, restoration	1	0	0	
	Reduced footprint	1	0	0	
1.C6	Stormwater runoff rate	1	1	1	RFP Requirement
	Stormwater treatment	1	0	0	
1.C7	Reduce site heat island	1	1	1	RFP Requirement
	Reduce roof heat islands	1	0	0	
1.C8	Reduce light pollution	1	0	0	
1.C9	Optimize site features	1	0	0	
1.C10	Cluster facilities	1	0	0	
	Mitigate offsite impacts	1	0	0	
1.C11	Site Ecology	1	1	1	RFP Requirement
2.C1	High efficiency irrigation/recycle site water	1	0	0	
	no irrigation	1	0	0	
2.C2	Innovative wastewater technologies	1	0	0	
2.C3	20% Water use reduction	1	0	0	
	30% Water use reduction	1	0	0	
3.R1	Building commissioning	R	R	R	RFP Requirement
3.R2	Minimum energy performance	R	R	R	RFP Requirement
3.R3	CFC Reduction	R	R	R	RFP Requirement
3.C1	Optimize energy performance	20	0	0	
3.C2	5% Onsite renewable energy	1	0	0	
	10% Onsite renewable energy	2	0	0	
	15% Onsite renewable energy	3	0	0	
	20% Onsite renewable energy	4	0	0	
3.C3	Additional commissioning	1	0	0	
3.C5	Measurement and verification	1	0	0	
3.C6	Green powered	1	0	0	
3.C7	Distributed generation	1	0	0	

NOTE: SEE SPIRIT TEXT FOR FULL DESCRIPTION OF REQUIREMENTS FOR EACH ITEM. COMPLIANCE IS REQUIRED IF "R" OR A NUMBER GREAT THAN ZERO APPEARS IN THE MANDATORY POINTS COLUMN.

PAR	SPIRIT Requirements and Summary Table FEATURE	Maximum Points Possible	Mandatory Points in RFP	Proposal Points	REMARKS
4.R1	Storage & Collection of recyclables	R	R	R	RFP Requirement
4.C1	Building reuse	3	0	0	
4.C2	Reduce construction waste	1	0	0	
	Reduce construction waste addl	1	0	0	
4.C3	Salvaged/reused materials	1	0	0	
	Salvaged/reused materials addl	1	0	0	
4.C4	Materials recycled content	1	0	0	
	Addl materials recycled content	1	0	0	
4.C5	Regionally manufactured materials	1	0	0	
	Regionally extracted materials	1	0	0	
4.C6	Rapidly renewable materials	1	0	0	
4.C7	Certified wood	1	0	0	
5.R1	Minimum IAQ performance	R	R	R	RFP Requirement
5.R2	Environmental tobacco smoke	R	R	R	RFP Requirement
5.C1	IAQ monitoring	1	0	0	
5.C2	Increase ventilation effectiveness	1	0	0	
5.C3	SMACNA/absorptive mtles/filtration	1	0	0	
	Flushout/baseline IAQ test	1	0	0	
5.C4	Adhesive/sealant VOC	1	1	1	RFP Requirement
	Green seals paints & coatings	1	1	1	RFP Requirement
	CRI green label carpet	1	1	1	RFP Requirement
	No urea/formaldehyde resins	1	1	1	RFP Requirement
5.C5	Indoor pollutant source control	1	0	0	
5.C6	Operable windows, perimeter light controls	1	1	1	RFP Requirement
	Non-perimeter controls	1	0	0	
5.C7	ASHRAE thermal comfort standards	1	1	1	RFP Requirement
	Temperature/humidity monitoring	1	0		
5.C8	75% daylighting	1	1	1	RFP Requirement
	90% outdoor view	1	0	0	N/A
5.C9	Noise control	1	1	1	RFP Requirement
5.C10	IAQ management plan	1	0	0	
6.C1	Team leader experience	1	1	1	RFP Requirement
	Train team	1	0	0	
	Identify project goals	1	0	0	
	Charettes	1	0	0	
	Resolve tradeoffs	2	0	0	
	Document results	1	0	0	
7.C1	Develop O&M plan	2	2	2	RFP Requirement
	Durable materials	1	1	1	RFP Requirement
7.C2	Quality indoor environment	1	1	1	RFP Requirement
	Functional work environment	1	1	1	RFP Requirement
	Healthy work environment	1	1	1	RFP Requirement
8.C1	Determine functional life	1	0	0	
	Determine building life	1	0	0	
8.C2	Design for future uses	1	0	0	
	Minimize building size	1	0	0	
	TOTAL	100	18		

NOTE: SEE SPIRIT TEXT FOR FULL DESCRIPTION OF REQUIREMENTS FOR EACH ITEM. COMPLIANCE IS REQUIRED IF "R" OR A NUMBER GREAT THAN ZERO APPEARS IN THE MANDATORY POINTS COLUMN.

Sustainable Project Rating Tool (SPiRiT)

Version 1.4.1

**U. S. Army Corps of Engineers
U. S. Army Assistant Chief of Staff for Installation Management**

June 2002

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NOTES

- 1) This Sustainable Project Rating Tool (SPiRiT) is derived from The U. S. Green Building Council LEED 2.0 (Leadership in Energy and Environmental Design) Green Building Rating System™.
- 2) The SPiRiT numbering scheme parallels, but does not match LEED 2.0. LEED does not number major sections, which it calls 'Credit Categories,' ex. 'Sustainable Sites,' rather it numbers criteria or 'credits' within each major section. SPiRiT credit numbers match those of LEED where there is a 1:1 comparison. Where additional credits have been added they fall at the end of major sections.

- 3) The SPiRiT Credits all follow the format: Intent, Requirement and Technologies/Strategies.

Intent: A statement of the primary goal for the credit;

Requirement: Quantifiable conditions necessary to achieve stated intent;

Technologies/Strategies: Suggested technologies, strategies and referenced guidance on the means to achieve identified requirements.

- 4) Projects are evaluated for each SPiRiT credit which are either 'Prerequisites' or result in a point score:

Prerequisites: These credits are a statement of minimum requirements and must be met. No further points will be awarded unless the minimum is achieved. These credits are recognizable by an 'R' in the number scheme, ex. 1.R1, and a 'Reqd.' in the score column.

Point Score: These credits are evaluated and result in a point score. Where the potential score is greater than 1, no partial points are granted.

- 5) SPiRiT Sustainable Project Certification Levels:

SPiRiT Bronze	25 to 34 Points
SPiRiT Silver	35 to 49 Points
SPiRiT Gold	50 to 74 Points
SPiRiT Platinum	75 to 100 Points

- 6) SPiRiT credits have been developed to address facility life cycle phases including programming, design, construction, and commissioning. Additional rating tools will be developed to address Installation/base master planning and facilities operations and maintenance, rehabilitation, recycling, and disposal.

- 7) POC for U. S. Army Corps of Engineers:

Mr. Harry Goradia
U. S. Army Corps of Engineers
ATTN: CEMP-ET
441 G Street NW
Washington, DC 20314
Phone (202) 761-7170, FAX (202) 761-0633
Email harry.goradia@hq02.usace.army.mil

- POC for U. S. Army Installations:

Mr. John Scharl
U. S. Army Assistant Chief of Staff for Installation
Management, Directorate of Facilities & Housing
ATTN: DAIM-FDF
7701 Telegraph Road, Bldg #2594 (Room 146B),
Alexandria, VA 22315-3800
Phone (703) 428-7614, FAX (703) 428-0197
Email scharja@hqda.army.mil

- 8) Sustainable Project Rating Tool (SPiRiT) Authors are:
Stephen N. Flanders (Lead), U. S. Army Engineering Research & Development Center (ERDC-CRREL)
Richard L. Schneider, U. S. Army Engineering Research & Development Center (ERDC-CERL)
Donald Fournier, U. S. Army Engineering Research & Development Center (ERDC-CERL)
Annette Stumpf, U. S. Army Engineering Research & Development Center (ERDC-CERL)

- 9) Army/USACE employees are members of the USGBC with membership privileges accessible via the USGBC web site, <http://www.usgbc.org>. For information on membership and access to available LEED resources to support use of SPiRiT and sustainable design in your projects, contact Richard Schneider at (217) 373-6752 or richard.l.schneider@erdc.usace.army.mil (Annette Stumpf at (217) 352-6511 ext. 7542 or annette.l.stumpf@erdc.usace.army.mil alternate).

- 10) For the latest information on SPiRiT and for access to guidance, tools and resources supporting sustainable design initiatives, visit the CERL 'Sustainable Design and Development Resource' website, <http://www.cecpr.army.mil/SustDesign>. There you may also join the CERL Sustainable Design ListServ to be directly notified of information pertinent to sustainable design.

1.0

Sustainable Sites

Score

20

1.R1

Erosion, Sedimentation, and Water Quality Control ⁽¹⁾

Reqd.

Intent:

Control erosion and pollutants to reduce negative impacts on water and air quality.

Requirement:

- ☐ Design a site sediment and erosion control plan and a pollution prevention plan that conforms to best management practices in the EPA's Storm Water Management for Construction Activities, EPA Document No. EPA-833-R-92-001, Chapter 3, OR local Erosion and Sedimentation Control standards and codes, whichever is more stringent. The plan shall meet the following objectives:
- Prevent loss of soil during construction by storm water runoff and/or wind erosion, including protecting topsoil by stockpiling for reuse.
 - Prevent sedimentation of storm sewer or receiving streams and/or air pollution with dust and particulate matter.
 - Prevent hazardous material discharge into storm water systems.
 - Prevent petroleum oils and lubricants (POL) discharge into storm water systems.

Technologies /Strategies:

The EPA standard lists numerous measures such as silt fencing, sediment traps, oil grit separators, construction phasing, stabilization of steep slopes, maintaining vegetated ground cover and providing ground cover that will meet this prerequisite.

1.C1

Site Selection ⁽¹⁾

Intent:

Avoid development of inappropriate sites and reduce the environmental impact from the location of a building on a site. Select site based on functional adjacencies/relationships and land use compatibility.

Requirement:

- ☐ Do not develop buildings on portions of sites that meet any one of the following criteria: 1
- Prime training or maneuver land.
 - Land whose elevation is lower than 5 ft. above the 100-year flood elevation as defined by FEMA.
 - Land that provides habitat for any species on the Federal or State threatened or endangered list.
 - Within 100 feet of any wetland as defined by 40 CFR, Parts 230-233 and Part 22, OR as defined by local or state rule or law, whichever is more stringent.
- ☐ Select site based on functional adjacencies/relationships and land use compatibility. 1
- Select sites close to existing roads and utilities or use an existing structure to minimize the need for new infrastructure.
 - Select site in area of high density.
 - Site facilities based on the strength of their relationships to other facilities/land-uses to limit travel distances. The stronger the relationship/functional interaction, the closer the distance between two facilities.
 - Select for distance to installation/base transit systems and access to pedestrian ways and bike paths.
 - Select for development previously used or developed suitable and available sites.

Technologies /Strategies:

Screen potential building sites for these criteria and/or ensure that these criteria are addressed by the designer during the conceptual design phase. Utilize landscape architects, ecologists, environmental engineers, civil engineers, and similar professionals for the screening process. New wetlands constructed as part of stormwater mitigation or other site restoration efforts are not affected by the restrictions of this prerequisite.

⁽¹⁾ Adapted material not reviewed or endorsed by U. S. Green Building Council.

1.0**Sustainable Sites (Continued)****1.C2****Installation/Base Redevelopment ⁽¹⁾**

Intent:

Channel development to installation/base cantonment areas with existing infrastructure, protecting greenfields and preserving habitat and natural resources.

Requirement:

- ☐ Increase localized density to conform to existing or desired density goals by utilizing sites that are located within existing cantonment areas of high development density. **1**
- ☐ Select sites close to existing roads and utilities or use an existing structure to minimize the need for new infrastructure. **1**

Technologies
/Strategies:

During the site selection process give preference to previously developed sites with installation/base cantonment redevelopment potential such as facility reduction program cleared sites.

1.C3**Brownfield Redevelopment ⁽¹⁾**

Intent:

Rehabilitate damaged sites where development is complicated by real or perceived environmental contamination, reducing pressure on undeveloped land.

Requirement:

- ☐ Develop on a site classified as a brownfield and provide remediation as required by EPA's Brownfield Redevelopment program requirements OR Develop a brownfield site (a site that has been contaminated by previous uses). **1**

Technologies
/Strategies:

Screen potential damaged sites for these criteria prior to selection for rehabilitation.

Utilize EPA OSWER Directive 9610.17 and ASTM Standard Practice E1739 for site remediation where required.

1.C4**Alternative Transportation ⁽¹⁾**

Intent:

Reduce pollution and land development impacts from automobile use.

Requirement:

- ☐ Locate building within ½ mile of installation/base transit systems. **1**
- ☐ Provide suitable means for securing bicycles, with convenient changing/shower facilities for use by cyclists, for 5% or more of building occupants. **1**
- ☐ Locate building within 2 miles of alternative-fuel refueling station(s). **1**
- ☐ Size parking capacity not to exceed minimum installation/base cantonment requirements AND provide preferred parking for carpools or van pools capable of serving 5% of the building occupants, OR, add no new parking for rehabilitation projects AND provide preferred parking for carpools or van pools capable of serving 5% of the building occupants. **1**

Technologies
/Strategies:

Select sites near public installation/base transit served by safe, convenient pedestrian pathways.

⁽¹⁾ Adapted material not reviewed or endorsed by U. S. Green Building Council.

1.0

Sustainable Sites (Continued)

1.C5

Reduced Site Disturbance ⁽¹⁾

Intent:

Conserve existing natural areas and restore damaged areas to provide habitat and promote biodiversity.

Requirement:

- ☐ On greenfield sites, limit site disturbance including earthwork and clearing of vegetation to 40 feet beyond the building perimeter, 5 feet beyond primary roadway curbs, walkways, and main utility branch trenches, and 25 feet beyond pervious paving areas that require additional staging areas in order to limit compaction in the paved area; OR, on previously developed sites, restore a minimum of 50% of the remaining open area by planting native or adapted vegetation. 1
- ☐ Reduce the development footprint (including building, access roads and parking) to exceed the installation/base's master plan local zoning's open space requirement for the site by 25% or in accordance with installation/base policy on open space set asides, whichever is greater. 1

Technologies /Strategies:

Note requirements on plans and in specifications. Establish contractual penalties for destruction of trees and site areas noted for protection. Reduce footprints by tightening program needs and stacking floor plans. Establish clearly marked construction and disturbance boundaries. Delineate laydown, recycling, and disposal areas. Use areas to be paved as staging areas. Work with local horticultural extension services, native plant societies, or installation/base agronomy staff to select indigenous plant species for site restoration and landscaping.

1.C6

Stormwater Management ⁽¹⁾

Intent:

Limit disruption of natural water flows by minimizing storm water runoff, increasing on-site infiltration and reducing contaminants.

Requirement:

Implement a stormwater management plan that results in:

- ☐ No net increase in the rate or quantity of stormwater runoff from undeveloped to developed conditions; OR, if existing imperviousness is greater than 50%, implement a stormwater management plan that results in a 25% decrease in the rate and quantity of stormwater runoff. 1
- ☐ Treatment systems designed to remove 80% of the average annual post development total suspended solids (TSS), and 40% of the average annual post development total phosphorous (TP), by implementing Best Management Practices (BMPs) outlined in EPA's Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters (EPA-840-B-92-002 1/93). 1

Technologies /Strategies:

Significantly reduce impervious surfaces, maximize on-site stormwater infiltration, and retain pervious and vegetated areas. Capture rainwater from impervious areas of the building for groundwater recharge or reuse within building. Use green/vegetated roofs. Utilize biologically-based and innovative stormwater management features for pollutant load reduction such as constructed wetlands, stormwater filtering systems, bioswales, bio-retention basins, and vegetated filter strips. Use open vegetated swales to reduce drainage velocity and erosion, reduce system maintenance, increase vegetative variety and support wildlife habitat where space permits.

1.C7

Landscape and Exterior Design to Reduce Heat Islands ⁽²⁾

Intent:

Reduce heat islands (thermal gradient differences between developed and undeveloped areas) to minimize impact on microclimate and human and wildlife habitat.

Requirement:

- ☐ Provide shade (within 5 years) on at least 30% of non-roof impervious surface on the site, including parking lots, walkways, plazas, etc., OR, use light-colored/ high-albedo materials (reflectance of at least 0.3) for 30% of the site's non-roof impervious surfaces, OR place a minimum of 50% of parking space under-ground OR use open-grid pavement system (net impervious area of LESS than 50%) for a minimum of 50% of the parking lot area. 1
- ☐ Use ENERGY STAR Roof compliant, high-reflectance AND low emissivity roofing (initial reflectance of at least .65 and three-year-aged reflectance of at least .5 when tested in accordance with ASTM E408) for a minimum of 75% of the roof surface; OR, install a "green" (vegetated) roof for at least 50% of the roof area. 1

Technologies /Strategies:

Employ design strategies, materials, and landscaping designs that reduce heat absorption of exterior materials. Note albedo/reflectance requirements in the drawings and specifications. Provide shade (calculated on June 21, noon solar time) using native or climate tolerant trees and large shrubs, vegetated trellises, or other exterior structures supporting vegetation. Substitute vegetated surfaces for hard surfaces. Explore elimination of blacktop and the use of new coatings and integral colorants for asphalt to achieve light colored surfaces.

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1.0**Sustainable Sites (Continued)****1.C8****Light Pollution Reduction**⁽¹⁾**Intent:**

Eliminate light trespass from the building site, improve night sky access, and reduce development impact on nocturnal environments.

Requirement:

- ☐ Do not exceed Illuminating Engineering Society of North America (IESNA) footcandle level requirements as stated in the Recommended Practice Manual: Lighting for Exterior Environments, AND design interior and exterior lighting such that zero direct-beam illumination leaves the building site.

1**Technologies /Strategies:**

Consult IESNA Recommended Practice Manual: Lighting for Exterior Environments for Commission Internationale de l'Eclairage (CIE) zone and pre and post curfew hour descriptions and associated ambient lighting level requirements. Ambient lighting for pre-curfew hours for CIE zones range between .01 footcandles for areas with dark landscapes such as parks, rural, and residential areas, and 1.5 footcandles for areas with high ambient brightness such as installation/base areas with high levels of nighttime activity. Design site lighting and select lighting styles and technologies to have a minimal impact off-site and minimal contribution to sky glow. Minimize lighting of architectural and landscape features. Exterior lighting should be consistent with security lighting requirements.

1.C9**Optimize Site Features****Intent:**

Optimize utilization of the site's existing natural features and placement of man-made features on the site.

Requirement:

- ☐ Perform both of the following:
 - Maximize the use of free site energy.
 - Plan facility, parking and roadways to "fit" existing site contours and limit cut and fill.

1**Technologies /Strategies:**

Evaluate site resources to ascertain how each can enhance the proposed project and visa versa. Work to maximum advantage of the site's solar and wind attributes. Use landscaping to optimize solar and wind conditions and to contribute to energy efficiency; Locate and orient the facility on the site to optimize solar and wind conditions.

1.C10**Facility Impact****Intent:**

Minimize negative impacts on the site and on neighboring properties and structures; avoid or mitigate excessive noise, shading on green spaces, additional traffic, obscuring significant views, etc.

Requirement:

- ☐ Cluster facilities to reduce impact, access distance to utilities and sufficient occupant density to support mass transit.
- ☐ Collaborate with installation/base and community planners to identify and mitigate potential impacts of the project beyond site boundaries, and transportation planners to insure efficient public transport.

1**1****Technologies /Strategies:**

Involve local/regional planners and community members in installation/base master planning processes. Recognize the context and the impact of a project beyond site boundaries, and integrate it with the larger installation/base/community context/land use.

1.C11**Site Ecology****Intent:**

Identify and mitigate all existing site problems including contamination of soil, water, and air, as well as any negative impacts caused by noise, eyesores, or lack of vegetation, enhancing or creating new site habitat.

Requirement:

- ☐ Develop site environmental management and mitigation plan.

1**Technologies /Strategies:**

Understand site and surrounding ecosystem interdependence and interconnectivity. Plan landscaping scheme to incorporate biodiversity. Preserve/enhance existing trees, hydrological features, ecosystems, habitats, and cultural resources. Increase the existence of healthy habitat for native species. Reintroduce native plants and trees where they have been destroyed by previous development.

⁽¹⁾ Adapted material not reviewed or endorsed by U. S. Green Building Council.

2.0	Water Efficiency	Score	5
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2.C1 Water Efficient Landscaping ⁽²⁾

Intent: Limit or eliminate the use of potable water for landscape irrigation.

Requirement: ☐ Use high efficiency irrigation technology, OR, use captured rain or recycled site water to reduce potable water consumption for irrigation by 50% over conventional means. 1

☐ Use only captured rain or recycled site water for an additional 50% reduction (100% total reduction) of potable water for site irrigation needs, OR, do not install permanent landscape irrigation systems. 1

Technologies /Strategies: Develop a landscaping water use baseline according to the methodology outlined in the LEED Reference Guide. Specify water-efficient, native or adapted, climate tolerant plantings. High efficiency irrigation technologies include micro irrigation, moisture sensors, or weather data based controllers. Feed irrigation systems with captured rainwater, gray water, or on-site treated wastewater.

2.C2 Innovative Wastewater Technologies ⁽²⁾

Intent: Reduce generation of wastewater and potable water demand, while increasing local aquifer recharge.

Requirement: ☐ Reduce the use of municipally provided potable water for building sewage conveyance by a minimum of 50%, OR, treat 100% of wastewater on site to tertiary standards. 1

Technologies /Strategies: Develop a wastewater baseline according to the methodology outlined in the LEED Reference Guide. Implement decentralized on-site wastewater treatment and reuse systems. Decrease the use of potable water for sewage conveyance by utilizing gray and/or black water systems. Non-potable reuse opportunities include, toilet flushing, landscape irrigation, etc. Provide advanced wastewater treatment after use by employing innovative, ecological, on-site technologies including constructed wetlands, a mechanical recirculating sand filter, or aerobic treatment systems.

2.C3 Water Use Reduction ⁽¹⁾

Intent: Maximize water efficiency within buildings to reduce the burden on municipal water supply and wastewater systems.

Requirement: ☐ Employ strategies that in aggregate use 20% less water than the water use baseline calculated for the building (not including irrigation) after meeting Energy Policy Act (EPACT) of 1992 fixture performance requirements. 1

☐ Exceed the potable water use reduction by an additional 10% (30% total efficiency increase). 1

Technologies /Strategies: Develop a water use baseline including all water consuming fixtures, equipment, and seasonal conditions according to methodology guidance outlined in the LEED Reference Guide. Specify water conserving plumbing fixtures that exceed Energy Policy Act (EPACT) of 1992 fixture requirements in combination with ultra high efficiency or dry fixture and control technologies. Specify high water efficiency equipment (dishwashers, laundry, cooling towers, etc.). Use alternatives to potable water for sewage transport water. Use recycled or storm water for HVAC/process make up water. Install cooling tower systems designed to minimize water consumption from drift, evaporation and blowdown.

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3.R1 Fundamental Building Systems Commissioning⁽¹⁾**Reqd.**

Intent: Verify and ensure that fundamental building elements and systems are designed, installed and calibrated to operate as intended.

Requirement: ☐ Implement all of the following fundamental best practice commissioning procedures.

- Engage a commissioning authority.
- Develop design intent and basis of design documentation.
- Include commissioning requirements in the construction documents.
- Develop and utilize a commissioning plan.
- Verify installation, functional performance, training and documentation.
- Complete a commissioning report.

Technologies /Strategies: Introduce standards and strategies into the design process early, and then carry through selected measures by clearly stating target requirements in the construction documents. Tie contractor final payments to documented system performance. Perform additional commissioning in accordance with the DOE Building Commissioning Guide, Version 2.2. Refer to the LEED Reference Guide for detailed descriptions of required elements and references to additional commissioning guides. Specify pre-occupancy baseline IAQ testing at time of commissioning. Test for indoor air concentrations of CO, CO₂, total VOCs and particulates. Test to assure that adequate ventilation rates have been achieved prior to initial occupancy.

3.R2 Minimum Energy Performance⁽¹⁾**Reqd.**

Intent: Establish the minimum level of energy efficiency for the base building and systems.

Requirement: ☐ Design to meet building energy efficiency and performance as required by TI 800-01 (Design Criteria).

Technologies /Strategies: Use building modeling and analysis techniques to establish and document compliance. ASHRAE/IESNA 90.1-1999 provides guidance for establishing building base case development and analysis. Refer to the LEED Reference Guide for a wide variety of energy efficiency strategy resources.

Use a professionally recognized and proven computer program or programs that integrate architectural features with air-conditioning, heating, lighting, and other energy producing or consuming systems. These programs will be capable of simulating the features, systems, and thermal loads used in the design. Using established weather data files, the program will perform 8760 hourly calculations. BLAST, DOE-2 or EnergyPlus are acceptable programs for these purposes.

3.R3 CFC Reduction in HVAC&R Equipment⁽²⁾**Reqd.**

Intent: Reduce ozone depletion.

Requirement: ☐ Zero use of CFC-based refrigerants in new base building HVAC&R systems. When reusing existing base building HVAC equipment, complete a comprehensive CFC phaseout conversion.

Technologies /Strategies: Specify only non-CFC-based refrigerants in all base building HVAC&R systems.

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3.0 Energy and Atmosphere (Continued)

3.C1 Optimize Energy Performance ⁽¹⁾

Intent: Achieve increasing levels of energy performance above the prerequisite standard to reduce environmental impacts associated with excessive energy use.

Requirement: ☐ Reduce design energy usage (DEU) compared to the energy use budget (EUB) in joules per square meter per year for regulated energy components as described in the requirements of Chapter 11 of the TI 800-01 (Design Criteria), as demonstrated by a whole building simulation.

20

- 1 Point will be awarded for every reduction in design energy use of 2.5% for both new and existing facilities for a maximum score of 20 points.

Regulated energy components include HVAC systems, building envelope, service hot water systems, lighting and other regulated systems as defined by ASHRAE.

Technologies /Strategies: Develop and use building modeling and analysis techniques to establish a base case that meets the minimum prerequisite standard. ASHRAE/IESNA 90.1-1999 provides guidance for establishing building base case development and analysis. Perform interactive energy use analysis for selected design elements that affect energy performance and document compliance.

Unit of measure for performance shall be annual energy usage in joules per square meter. Life-Cycle energy costs shall be determined using rates for purchased energy, such as electricity, gas, oil, propane, steam, and chilled water and approved by the adopting authority. Refer to the LEED Reference Guide or Whole Building Design Guide for a wide variety of energy efficiency resources and strategies including conservation measures, electromechanical energy efficiency technologies (for example ground-source heat pumps), passive heating and cooling strategies, solar hot water, and daylighting.

Life-Cycle costing will be done in accordance with 10 CFR 436.

Consider installation of an Energy Management and Control System (EMCS), which is compatible with exiting installation systems to optimize performance. Use sensors to control loads based on occupancy, schedule and/or the availability of natural resources use (day light or natural ventilation).

3.C2 Renewable Energy ⁽¹⁾

Intent: Encourage and recognize increasing levels of self-supply through renewable technologies to reduce environmental impacts associated with fossil fuel energy use.

Requirement: ☐ Supply a net fraction of the building's total energy use through the use of on-site renewable energy systems.

% of Total Annual Energy Usage in Renewables

5%

10%

15%

20%

1
2
3
4

Technologies /Strategies: Employ the use of on-site non-polluting-source renewable technologies contributing to the total energy requirements of the project. Consider and use high temperature solar and/or geothermal, photovoltaics, wind, biomass (other than unsustainably harvested wood), and bio-gas. Passive solar, solar hot water heating, ground-source heat pumps, and daylighting do not qualify for points under this credit. Credit for these strategies is given in Energy & Atmosphere Credit 1: Optimizing Energy Performance.

⁽¹⁾ Adapted material not reviewed or endorsed by U. S. Green Building Council.

3.0 Energy and Atmosphere (Continued)

3.C3 Additional Commissioning ⁽²⁾

Intent: Verify and ensure that the entire building is designed, constructed, and calibrated to operate as intended.

Requirement: ☐ In addition to the Fundamental Building Commissioning prerequisite, implement the following additional commissioning tasks:

1

1. Conduct a focused review of the design prior to the construction documents phase.
2. Conduct a focused review of the construction documents when close to completion.
3. Conduct a selective review of contractor submittals of commissioned equipment.
4. Develop a system and energy management manual.
5. Have a contract in place for a near-warranty end or post occupancy review.

Items 1, 2, and 3 must be performed by someone other than the designer.

Technologies /Strategies: Introduce standards and strategies into the design process early, and then carry through selected measures by clearly stating target requirements in the construction documents. Tie contractor final payments to documented system performance. Refer to the LEED Reference Guide for detailed descriptions of required elements and references to additional guidelines.

3.C4 << Deleted >> ⁽¹⁾

3.C5 Measurement and Verification ⁽¹⁾

Intent: Provide for the ongoing accountability and optimization of building energy and water consumption performance over time.

Requirement: ☐ Comply with the installed equipment requirements for continuous metering as stated in selected Measurement and Verification Methods - Option B: Retrofit Isolation of the US DOE's International Performance Measurement and Verification Protocol (IPMVP) for the following:

1

- Lighting systems and controls.
- Constant and variable motor loads.
- Variable frequency drive (VFD) operation.
- Chiller efficiency at variable loads (kW/ton).
- Cooling load.
- Air and water economizer and heat recovery cycles.
- Air distribution static pressures and ventilation air volumes.
- Boiler efficiencies.
- Building specific process energy efficiency systems and equipment.
- Indoor water risers and outdoor irrigation systems.

Technologies /Strategies: Design and specify equipment to be installed in base building systems to allow for comparison, management, and optimization of actual vs. estimated energy and water performance. Employ building automation systems to perform M&V functions where applicable. Tie contractor final payments to documented M&V system performance and include in the commissioning report. Provide for ongoing M&V system maintenance and operating plan in building operations and maintenance manuals. Consider installation/base of an Energy Management and Control System (EMCS), which is compatible with existing installation/base systems to optimize performance.

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3.0 Energy and Atmosphere (Continued)

3.C6 Green Power ⁽¹⁾

Intent: Encourage the development and use of grid-source, renewable energy technologies on a net zero pollution basis.

Requirement: ☐ Engage in a two year contract to purchase the amount of power equal to projected building consumption generated from renewable sources that meet the Center for Resource Solutions (CRS) Green-E requirements. 1

Technologies /Strategies: Purchase power from a provider that guarantees a fraction of its delivered electric power is from net nonpolluting renewable technologies. Begin by contacting local utility companies. If the project is in an open market state, investigate Green Power and Power Marketers licensed to provide power in that state. Grid power that qualifies for this credit originates from solar, wind, geothermal, biomass, or low-impact hydro sources. Low-impact hydro shall comply with the Low Impact Hydropower Certification Program.

3.C7 Distributed Generation

Intent: Encourage the development and use of distributed generation technologies, which are less polluting than grid-source energy.

Requirement: ☐ Reduce total energy usage and emissions by considering source energy implications and local cogeneration and direct energy conversion. Generate at least 50% of the building's projected annual consumption by on-site distributed generation sources. 1

Technologies /Strategies: Investigate the use of integrated generation and delivery systems, such as co-generation, fuel cells, micro-turbines and off-peak thermal storage.

⁽¹⁾ Adapted material not reviewed or endorsed by U. S. Green Building Council.

4.R1**Storage & Collection of Recyclables⁽¹⁾****Reqd**

Intent: Facilitate the reduction of waste generated by building occupants that is hauled to and disposed of in landfills.

Requirement: ☐ Provide an easily accessible area that serves the entire building that is dedicated to the separation, collection and storage of materials for recycling including (at a minimum) paper, glass, plastics, and metals.

Technologies /Strategies: Establish a waste management plan which meets requirements of the installation/base environmental and/or solid waste management plans in cooperation with users to encourage recycling. Reserve space for recycling functions early in the building occupancy programming process and show areas dedicated to collection of recycled materials on space utilization plans. Broader recycling support space considerations should allow for collection and storage of the required elements and newspaper, organic waste (food and soiled paper), and dry waste. When collection bins are used, bin(s) should be able to accommodate a 75% diversion rate and be easily accessible to custodial staff and recycling collection workers. Consider bin designs that allow for easy cleaning to avoid health issues.

4.C1**Building Reuse⁽¹⁾**

Intent: Extend the life cycle of existing building stock, conserve resources, retain cultural resources, reduce waste, and reduce environmental impacts of new buildings as they relate to materials manufacturing and transport.

Requirement: Reuse large portions of existing structures during renovation or redevelopment projects.

- ☐ Maintain at least 75% of existing building structure and shell (exterior skin and framing excluding window assemblies). 1
- ☐ Maintain an additional 25% (100% total) of existing building structure and shell (exterior skin and framing excluding window assemblies). 1
- ☐ Maintain 100% of existing building structure and shell AND 50% non-shell (walls, floor coverings, and ceiling systems). 1

Technologies /Strategies: Evaluate retention of existing structure. Consider facade preservation, particularly in installation/base areas. During programming and space planning, consider adjusting needs and occupant use patterns to fit within existing building structure and interior partition configurations. Identify and effectively address energy, structural, and indoor environmental (lead & asbestos) issues in building reuse planning and deconstruction documents. Percentage of reused non-shell building portions will be calculated as the total area (s.f.) of reused walls, floor covering, and ceiling systems, divided by the existing total area (s.f.) of walls, floor covering, and ceiling systems.

4.C2**Construction Waste Management⁽¹⁾**

Intent: Divert construction, demolition, and land clearing debris from landfill disposal. Redirect recyclable material back to the manufacturing process.

Requirement: Develop and implement a waste management plan, quantifying material diversion by weight:

- ☐ Recycle and/or salvage at least 50% (by weight) of construction, demolition, and land clearing waste. 1
- ☐ Recycle and/or salvage an additional 25% (75% total by weight) of the construction, demolition, and land clearing debris. 1

Technologies /Strategies: Develop and specify a waste management plan which meets requirements of the installation/base environmental and/or solid waste management plans that identifies licensed haulers and processors of recyclables; identifies markets for salvaged materials; employs deconstruction, salvage, and recycling strategies and processes, includes waste auditing; and documents the cost for recycling, salvaging, and reusing materials. Source reduction on the job site should be an integral part of the plan.

The plan should address recycling of corrugated cardboard, metals, concrete brick, asphalt, land clearing debris (if applicable), beverage containers, clean dimensional wood, plastic, glass, gypsum board, and carpet; evaluate the cost-effectiveness of recycling rigid insulation, engineered wood products and other materials; hazardous materials storage and management; and participation in manufacturers' "take-back" programs to the maximum extent possible. Refer to the LEED Reference Guide for guidelines and references that provide waste management plan development and implementation support including model bid specifications.

⁽¹⁾ Adapted material not reviewed or endorsed by U. S. Green Building Council.

4.0

Materials and Resources (Continued)

4.C3

Resource Reuse ⁽²⁾

Intent:

Extend the life cycle of targeted building materials, reducing environmental impacts related to materials manufacturing and transport.

Requirement:

- ☐ Specify salvaged or refurbished materials for 5% of building materials. 1
- ☐ Specify salvaged or refurbished materials for 10% of building materials. 1

Technologies /Strategies:

Commonly salvaged building materials include wood flooring/ paneling/cabinets, doors and frames, mantels, iron work and decorative lighting fixtures, brick, masonry and heavy timbers. See the LEED Reference Guide for calculation tools and guidelines. Determine percentages in terms of dollar value using the following steps:

1. Calculate total dollars* (see exclusions) of the salvaged or refurbished material.
2. Calculate total dollars (see exclusions) of all building materials.
3. Divide Step 1 by Step 2 to determine the percentage.

Exclusions: In total dollar calculations, exclude; labor costs; all mechanical and electrical material and labor costs; and project overhead and fees. *If the cost of the salvaged or refurbished material is below market value, use replacement cost to estimate the material value, otherwise use actual cost to the project.

4.C4

Recycled Content ⁽¹⁾

Intent:

Increase demand for building products that have incorporated recycled content material, reducing the impacts resulting from extraction of new material.

Requirement:

- ☐ Specify a minimum of 25% of building materials that contain in aggregate a minimum weighted average of 20% post-consumer recycled content material, OR, a minimum weighted average of 40% post-industrial recycled content material. 1
- ☐ Specify an additional 25% (50% total) of building materials that contain in aggregate, a minimum weighted average of 20% post consumer recycled content material, OR, a minimum weighted average of 40% post-industrial recycled content material. 1

Technologies /Strategies:

Specify building materials containing recycled content for a fraction of total building materials. Select products and materials with supporting information from the AIA Resource Guide or the EPA Environmentally Preferable Purchasing (EPP) Program. Common building materials and products with recycled content include; wall, partition, and ceiling materials and systems; insulation; tiles and carpets; cement, concrete, and reinforcing metals; structural and framing steel. For products/materials not listed, selection should be made on the basis of EPP criterion and/or:

- Toxicity;
- Embodied energy;
- Production use of water, energy and ozone depleting substances (ODSs);
- Production limits on toxic emissions and effluents;
- Minimal, reusable or recycled/recyclable packaging;
- Impact on indoor environmental quality (IEQ);
- Installation that limits generation of waste;
- Materials that limit waste generation over their life;
- EPA guideline compliance; and
- Harvested on a sustainable yield basis.

See the LEED Reference Guide for a summary of the EPA guidelines and calculation methodology guidelines. Determine percentages in terms of dollar value using the following steps:

1. Calculate total dollars (see exclusions) of the material that contain recycled content.
2. Calculate total dollars (see exclusions) of all building materials.
3. Divide Step 1 by Step 2 to determine the percentage.

Exclusions: Labor costs; all mechanical and electrical material and labor costs; project overhead and fees)

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4.0

Materials and Resources (Continued)

4.C5 Local/Regional Materials ⁽²⁾

Intent: Increase demand for building products that are manufactured locally, reducing the environmental impacts resulting from transportation, and supporting the local economy.

- Requirement:**
- ☐ Specify a minimum of 20% of building materials that are manufactured regionally within a radius of 500 miles. 1
 - ☐ Of these regionally manufactured materials, specify a minimum of 50% that are extracted, harvested, or recovered within 500 miles. 1

Technologies /Strategies: Specify and install regionally extracted, harvested, and manufactured building materials. Contact the state and local waste management boards for information about regional building materials. See the LEED Reference Guide for calculation methodology guidelines. Determine percentages in terms of dollar value using the following steps:

1. Calculate total dollars (see exclusions) of material that is locally or regionally manufactured.
2. Calculate total dollars (see exclusions) of all building materials.
3. Divide Step 1 by Step 2 to determine the percentage.

Exclusions: Labor costs; all mechanical and electrical material and labor costs; project overhead and fees.

4.C6 Rapidly Renewable Materials ⁽²⁾

Intent: Reduce the use and depletion of finite raw and long cycle renewable materials by replacing them with rapidly renewable materials.

- Requirement:** ☐ Specify rapidly renewable building materials for 5% of total building materials. 1

Technologies /Strategies: Rapidly renewable resources are those materials that substantially replenish them-selves faster than traditional extraction demand (e.g. planted and harvested in less than a 10 year cycle) and do not result in significant biodiversity loss, increase erosion, air quality impacts, and that are sustainably managed. See the LEED Reference Guide for calculation methodology guidelines. Determine percentages in terms of dollar value using the following steps:

1. Calculate total dollars (see exclusions) of materials that are considered to be rapidly renewable.
2. Calculate total dollars (see exclusions) of all building materials.
3. Divide Step 1 by Step 2 to determine the percentage.

Exclusions: Labor costs; all mechanical and electrical material and labor costs; project overhead and fees.

4.C7 Certified Wood ⁽²⁾

Intent: Encourage environmentally responsible forest management.

- Requirement:** ☐ Use a minimum of 50% of wood-based materials certified in accordance with the Forest Stewardship Council guidelines for wood building components including but not limited to framing, flooring, finishes, furnishings, and non-rented temporary construction applications such as bracing, concrete form work and pedestrian barriers. 1

Technologies /Strategies: Refer to the Forest Stewardship Council guidelines for wood building components that qualify for compliance to the requirements and incorporate into material selection for the project.

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5.R1	<u>Minimum IAQ Performance</u> ⁽¹⁾	Reqd.
Intent:	Establish minimum IAQ performance to prevent the development of indoor air quality problems in buildings, maintaining the health and well being of the occupants.	
Requirement:	<input type="checkbox"/> Meet the minimum requirements of voluntary consensus standard ASHRAE 62-1999, Ventilation for Acceptable Indoor Air Quality and approved Addenda.	
Technologies /Strategies:	Include proactive design details that will eliminate some of the common causes of indoor air quality problems in buildings. Introduce standards into the design process early. Incorporate references to targets in plans and specifications. Ensure ventilation system outdoor air capacity can meet standards in all modes of operation. Locate building outdoor air intakes (including operable windows) away from potential pollutants/contaminant sources such as sporulating plants (allergens), loading areas, building exhaust fans, cooling towers, sanitary vents, dumpsters, vehicular exhaust, and other sources. Include operational testing in the building commissioning report. Design cooling coil drain pans to ensure complete draining. Include measures to control and mitigate radon buildup in areas where it is prevalent. Limit humidity to a range that minimizes mold growth and promotes respiratory health.	
5.R2	<u>Environmental Tobacco Smoke (ETS) Control</u> ⁽²⁾	Reqd.
Intent:	Prevent exposure of building occupants and systems to Environmental Tobacco Smoke (ETS).	
Requirement:	<input type="checkbox"/> Zero exposure of nonsmokers to ETS by prohibition of smoking in the building, OR, by providing a designated smoking room designed to effectively contain, capture and remove ETS from the building. At a minimum, the smoking room shall be directly exhausted to the outdoors with no recirculation of ETS-containing air to the non-smoking area of the building, enclosed with impermeable structural deck-to-deck partitions and operated at a negative pressure compared with the surrounding spaces of at least 7 Pa (0.03 inches of water gauge). Performance of smoking rooms shall be verified using tracer gas testing methods as described in ASHRAE Standard 129-1997. Acceptable exposure in non-smoking areas is defined as less than 1% of the tracer gas concentration in the smoking room detectable in the adjoining non-smoking areas. Smoking room testing as described in the ASHRAE Standard 129-1997 is required in the contract documents and critical smoking facility systems testing results must be included in the building commissioning plan and report or as a separate document.	
Technologies /Strategies:	Prohibit smoking in the building and/or provide designated smoking areas outside the building in locations where ETS cannot reenter the building or ventilation system and away from high building occupant or pedestrian traffic.	
5.C1	<u>IAQ Monitoring</u> ⁽¹⁾	
Intent:	Provide capacity for indoor air quality (IAQ) monitoring to sustain long term occupant health and comfort.	
Requirement:	<input type="checkbox"/> Install a permanent carbon dioxide (CO ₂) monitoring system that provides feedback on space ventilation performance in a form that affords operational adjustments, AND specify initial operational set point parameters that maintain indoor carbon dioxide levels no higher than outdoor levels by more than 530 parts per million at any time.	1
Technologies /Strategies:	Install an independent system or make CO ₂ monitoring a function of the building automation system. Situate monitoring locations in areas of the building with high occupant densities and at the ends of the longest runs of the distribution ductwork. Specify that system operation manuals require calibration of all of the sensors per manufacturer recommendations but not less than one year. Include sensor and system operational testing and initial set point adjustment in the commissioning plan and report. Also consider periodic monitoring of carbon monoxide (CO), total volatile organic compounds (TVOCs), and particulates (including PM ₁₀).	

⁽¹⁾ Adapted material not reviewed or endorsed by U. S. Green Building Council.

⁽²⁾ Adapted material not reviewed or endorsed by U. S. Green Building Council.

5.0

Indoor Environmental Quality (IEQ) (Continued)

5.C2

Increase Ventilation Effectiveness ⁽²⁾

Intent: Provide for the effective delivery and mixing of fresh air to building occupants to support their health, safety, and comfort.

Requirement: ☐ For mechanically ventilated buildings, design ventilation systems that result in an air change effectiveness (E) greater than or equal to 0.9 as determined by ASHRAE 129-1997. For naturally ventilated spaces demonstrate a distribution and laminar flow pattern that involves not less than 90% of the room or zone area in the direction of air flow for at least 95% of hours of occupancy. 1

Technologies /Strategies: Employ architectural and HVAC design strategies to increase ventilation effectiveness and prevent short-circuiting of airflow delivery. Techniques available include use of displacement ventilation, low velocity, and laminar flow ventilation (under floor or near floor delivery) and natural ventilation. Operable windows with an architectural strategy for natural ventilation, cross ventilation, or stack effect can be appropriate options with study of inlet areas and locations. See the LEED Reference Guide for compliance methodology guidelines.

5.C3

Construction IAQ Management Plan ⁽²⁾

Intent: Prevent indoor air quality problems resulting from the construction/renovation process, to sustain long term installer and occupant health and comfort.

Requirement: Develop and implement an Indoor Air Quality (IAQ) Management Plan for the construction and pre-occupancy phases of the building as follows:

☐ During construction meet or exceed the minimum requirements of the Sheet Metal and Air Conditioning National Contractors Association (SMACNA) IAQ Guideline for Occupied Buildings under Construction, 1995, AND protect stored on-site or installed absorptive materials from moisture damage, AND replace all filtration media immediately prior to occupancy (Filtration media shall have a Minimum Efficiency Reporting Value (MERV) of 13 as determined by ASHRAE 52.2-1999). 1

☐ Conduct a minimum two-week building flushout with new filtration media at 100% outside air after construction ends and prior to occupancy, OR, conduct a baseline indoor air quality testing procedure consistent with current EPA protocol for Environmental Requirements, Baseline IAQ and Materials, for the Research Triangle Park Campus, Section 01445. 1

Technologies /Strategies: Specify containment control strategies including protecting the HVAC system, controlling pollutant sources, interrupting pathways for contamination, enforcing proper housekeeping and coordinating schedules to minimize disruption. Specify the construction sequencing to install absorptive materials after the prescribed dry or cure time of wet finishes to minimize adverse impacts on indoor air quality. Materials directly exposed to moisture through precipitation, plumbing leaks, or condensation from the HVAC system are susceptible to microbial contamination. Absorptive materials to protect and sequence installation include; insulation, carpeting, ceiling tiles, and gypsum products. Appoint an IEQ Manager with owner's authority to inspect IEQ problems and require mitigation as necessary.

5.C4

Low-Emitting Materials ⁽²⁾

Intent: Reduce the quantity of indoor air contaminants that are odorous or potentially irritating to provide installer and occupant health and comfort.

Requirement: Meet or exceed VOC limits for adhesives, sealants, paints, composite wood products, and carpet systems as follows:

☐ Adhesives must meet or exceed the VOC limits of South Coast Air Quality Management District Rule #1168 by, AND all sealants used as a filler must meet or exceed Bay Area Air Resources Board Reg. 8, Rule 51. 1

☐ Paints and coatings must meet or exceed the VOC and chemical component limits of Green Seal requirements. 1

☐ Carpet systems must meet or exceed the Carpet and Rug Institute Green Label Indoor Air Quality Test Program. 1

☐ Composite wood or agrifiber products must contain no added urea-formaldehyde resins. 1

Technologies /Strategies: Evaluate and preferentially specify materials that are low emitting, non-irritating, nontoxic and chemically inert. Request and evaluate emissions test data from manufacturers for comparative products. Ensure that VOC limits are clearly stated in specifications, in General Conditions, or in each section where adhesives, sealants, coatings, carpets, and composite woods are addressed.

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5.0

Indoor Environmental Quality (IEQ) (Continued)

5.C5

Indoor Chemical and Pollutant Source Control ⁽¹⁾

Intent: Avoid exposure of building occupants to potentially hazardous chemicals that adversely impact air quality.

- Requirement: ☐ Design to minimize cross-contamination of regularly occupied areas by chemical pollutants: 1
- Employ permanent entryway systems (grills, grates, etc.) to capture dirt, particulates, etc. from entering the building at all high volume entryways, AND provide areas with structural deck to deck partitions with separate outside exhausting, no air recirculation and negative pressure where chemical use occurs (including housekeeping areas and copying/print rooms), AND provide drains plumbed for appropriate disposal of liquid waste in spaces where water and chemical concentrate mixing occurs.

Technologies
/Strategies:

Design to physically isolate activities associated with chemical contaminants from other locations in the building, providing dedicated systems to contain and remove chemical pollutants from source emitters at source locations. Applicable measures include eliminating or isolating high hazard areas; designing all housekeeping chemical storage and mixing areas (central storage facilities and janitors closets) to allow for secure product storage; designing copy/fax/printer/printing rooms with structural deck to deck partitions and dedicated exhaust ventilation systems; and including permanent architectural entryway system(s) to catch and hold particles to keep them from entering and contaminating the building interior.

Consider utilization of EPA registered anti-microbial treatments in carpet, textile or vinyl wall coverings, ceiling tiles or paints where microbial contamination is a concern. Utilize "breathable" wall finishes where circumstances require, to reduce moisture build-up and prevent microbial contamination. Minimize selection of fibrous materials, e.g. insulation, carpet and padding and flexible fabrics, whose exposed surfaces when exposed to the air stream or occupied space can contribute significant emissions and absorb and re-emit other contaminants over time.

5.C6

Controllability of Systems ⁽²⁾

Intent: Provide a high level of individual occupant control of thermal, ventilation, and lighting systems to support optimum health, productivity, and comfort conditions.

- Requirement: ☐ Provide a minimum of one operable window and one lighting control zone per 200 s.f. for all occupied areas within 15 feet of the perimeter wall. 1
- ☐ Provide controls for each individual for airflow, temperature, and lighting for 50% of the non perimeter, regularly occupied areas. 1

Technologies
/Strategies:

Provide individual or integrated controls systems that control lighting, airflow, and temperature in individual rooms and/or work areas. Consider combinations of ambient and task lighting control and operable windows for perimeter and VAV systems for non perimeter with a 1:1: 2 terminal box to controller to occupant ratio.

5.C7

Thermal Comfort ⁽²⁾

Intent: Provide for a thermally comfortable environment that supports the productive and healthy performance of the building occupants.

- Requirement: ☐ Comply with ASHRAE Standard 55-1992, Addenda 1995 for thermal comfort standards including humidity control within established ranges per climate zone. 1
- ☐ Install a permanent temperature and humidity monitoring system configured to provide operators control over thermal comfort performance and effectiveness of humidification and/or dehumidification systems in the building. 1

Technologies
/Strategies:

Integrated envelope and HVAC system design strategies that achieve thermal comfort conditions based on mean radiant temperature, local air velocity, relative humidity, and air temperature. Install and maintain a temperature and humidity monitoring system for key areas of the building (i.e., at the perimeter, and spaces provided with humidity control). This function can be satisfied by the building automation system. Specify in system operation manuals that all sensors require quarterly calibration. Include criteria verification and system operation in commissioning plan and report.

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5.0

Indoor Environmental Quality (IEQ) (Continued)

5.C8

Daylight and Views ⁽²⁾

Intent:

Provide a connection between indoor spaces and the outdoor environment through the introduction of sunlight and views into the occupied areas of the building.

Requirement:

- ☐ Achieve a minimum Daylight Factor of 2% (excluding all direct sunlight penetration) in 75% of all space occupied for critical visual tasks, not including copy rooms, storage areas, mechanical, laundry, and other low occupancy support areas. Exceptions include those spaces where tasks would be hindered by the use of daylight or where accomplishing the specific tasks within a space would be enhanced by the direct penetration of sunlight. 1
- ☐ Direct line of sight to vision glazing from 90% of all regularly occupied spaces, not including copy rooms, storage areas, mechanical, laundry, and other low occupancy support areas. 1

Technologies /Strategies:

Implement design strategies to provide access to daylight and views to the outdoors in a glare-free way using exterior sun shading, interior light shelves, and /or window treatments. Orient buildings to maximize daylighting options. Consider shallow or narrow building footprints. Employ courtyards, atriums, clerestory windows, skylights, and light shelves to achieve daylight penetration (from other than direct effect or direct rays from the sun) deep into regularly occupied areas of the building.

5.C9

Acoustic Environment /Noise Control

Intent:

Provide appropriate acoustic conditions for user privacy and comfort.

Requirement:

- ☐ Minimize environmental noise through appropriate use of insulation, sound-absorbing materials and noise source isolation. 1

Technologies /Strategies:

Evaluate each occupied environment and determine the appropriate layout, materials and furnishings design.

5.C10

Facility In-Use IAQ Management Plan

Intent:

Insure the effective management of facility air quality during its life.

Requirement:

- ☐ Perform all of the following: 1
 - Develop an air quality action plan to include scheduled HVAC system cleaning.
 - Develop an air quality action plan to include education of occupants and facility managers on indoor pollutants and their roles in preventing them.
 - Develop an air quality action plan to include permanent monitoring of supply and return air, and ambient air at the fresh air intake, for carbon monoxide (CO), carbon dioxide (CO₂), total volatile organic compounds (TVOCs), and particulates (including PM₁₀).

Technologies /Strategies:

Provide action plan for periodic system maintenance, monitoring, occupant/manager training.

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6.C1**Holistic Delivery of Facility****Intent:**

Encourage a facility delivery process that actively engages all stakeholders in the design process to deliver a facility that meets all functional requirements while effectively optimizing tradeoffs among sustainability, first costs, life cycle costs and mission requirements.

Requirement:

- ☐ Choose team leaders that are experienced in holistic delivery of facilities. 1
- ☐ Train the entire team in the holistic delivery process. The team must include all stakeholders in the facility delivery, including the users, the contracting staff, the construction representatives, project manager, and design/engineering team members. 1
- ☐ Identify project goals and metrics. 1
- ☐ Plan and execute charrettes with team members at critical phases of the facility delivery. 1
- ☐ Identify and resolve tradeoffs among sustainability, first costs, life cycle costs and mission requirements through charrettes and other collaborative processes. 2
- ☐ Document required results for each phase of project deliverables that achieve the project goals and are measurable throughout the facility life span. 1

Technologies /Strategies:

Develop performance specifications or choose competitive range of products that meet environmental criteria.

Use automated modeling and analysis tools to assess site and facility design alternatives.

Conduct life-cycle cost analysis (LCCA) in the design process according to the Federal Facilities Council Technical Report, Sustainable Federal Facilities: A Guide To Integrating Value Engineering, Life Cycle Costing, and Sustainable Development, FFC # 142, 2000.

Conduct a full ecological assessment to include soil quality, water resources and flows, vegetation and trees, wildlife habitats and corridors, wetlands, and ecologically sensitive areas to identify the least sensitive site areas for development. Evaluate space utilization/functions to reduce overall space requirements, considering networking, flextime, flexi-place, dual-use, and other strategies to reduce space requirements/optimize facility size.

7.C1**Operation and Maintenance****Intent:**

Encourage the development of a facility delivery process that enhances efficient operation and maintenance of the facility.

Requirement:

- ☐ Develop a facility operations and maintenance program to include: 2
 - Commissioning instructions for all facility systems.
 - Comprehensive facility operations and maintenance instructions for system operation, performance verification procedures and results, an equipment inventory, warrantee information, and recommended maintenance schedule. The instructions should include a comprehensive, preventive maintenance program to keep all facility systems functioning as designed.
 - A periodic training program for occupants, facilities managers, and maintenance staff in all facility operations and maintenance activities.
 - Instructions on sustainable cleaning and pest control practices.
 - Develop a comprehensive site/facility recycling/waste management plan.
- ☐ Provide surfaces, furnishings, and equipment that are appropriately durable, according to life cycle cost analysis. 1

Technologies /Strategies:

Maintain facility elements, systems and subsystems on a routine maintenance schedule to ensure integrity and longevity.

Perform scheduled cleaning and maintenance activities with nontoxic environmentally preferable cleaning products and procedures. Keep air ducts clean and free of microorganisms through a structured program of preventive maintenance. Clean lighting systems following a regular maintenance schedule to ensure optimum light output and energy efficiency.

Use pesticides and herbicides sparingly and only when necessary with preference to natural methods and materials over poisons and toxic agents.

Use automated monitors and controls for energy, water, waste, temperature, moisture, and ventilation monitors and controls. Turn off the lights, computers, computer monitors, and equipment when not in use. Enable power-down features on office equipment.

7.C2**Soldier and Workforce Productivity and Retention****Intent:**

Provide a high-quality, functional, healthy and safe work environment to promote soldier and workforce productivity and retention.

Requirement:

- ☐ Provide a high quality indoor environment to enhance user/occupant quality of life (QOL). 1
- ☐ Provide a highly functional work environment to promote user/occupant work productivity. 1
- ☐ Provide a healthy and safe work environment to sustain QOL and productivity. 1

Technologies /Strategies:

Use a registered/certified interior designer to provide stimulating interior environments with pleasant colors, surface treatments, room proportions and ceiling heights, external views, natural lighting, and quality detailing for interior furnishings, equipment, materials and finishes. Use IES standards to provide light to occupied space with variations in level, comfortable contrasts, natural color rendition, natural/man-made, and adequate controls to optimize light aesthetic qualities. Provide occupant control of individual work areas configuration, and lighting, thermal and ventilation systems.

Collaborate with end users to identify functional and technical requirements and to perform adjacency studies. Configure occupied space to address the specific workers/occupants functions and activities that will be carried out there. Meet TI 800-01 Design Guide requirements. Design and configure occupied space, and select furniture and equipment using human ergonomics. Identify existing user amenities, such as dining, recreation, socialization, shopping and child care facilities. Identify what amenities should be incorporated into the project or provided in the future, nearby facility. Provide ventilation air in sufficient volume free from natural and man made contaminants.

8.C1**Functional Life of Facility and Supporting Systems**

Intent:

Assess the functional life of a facility and its supporting systems to optimize the infrastructure investment.

Requirement:

- ☐ Identify how long the designed function is likely to occupy the current facility. 1
- ☐ Identify how long the envelope, structure, HVAC, plumbing, communications, electrical, and other systems are likely to last before requiring replacement or upgrade. Consider economic, functional and physical obsolescence. 1

Technologies /Strategies:

Assess the typical or likely lifespan of the function(s) to be accommodated to forecast eventual adaptation to a different use(s). Assess the life spans of the various building systems/components to forecast their revision/replacement during the facility lifespan and design in a manner that facilitates revision/replacement.

Consider the life span of the weapon systems, doctrines, or other programs supported by the facility.

Use life cycle data and other sources to identify the life span of the embodied systems.

8.C2**Adaptation, Renewal and Future Uses**

Intent:

Encourage facility design that is responsive to change over time to maximize accommodation of future uses without creating waste and insuring maximum useful life of products.

Requirement:

- ☐ Identify possible future uses for the facility; consider alternatives that expand the list of possible future uses. AND Design the building to accommodate as wide a range of future uses, as practical. AND Design the installation of building systems to accommodate foreseeable change with a minimum amount of disruption, cost, and additional materials. 1
- ☐ Build the smallest facility necessary to meet current mission functional requirements, using the most efficient shape and form, while taking into consideration expansion capabilities and potential future mission requirements. AND Design the facility for recycling of materials and systems. 1

Technologies /Strategies:

Create durable, long-lasting and adaptable facility shell and structural system. Create an adaptable, flexible facility design using open planning, service corridors, interstitial space, access floors, demountable walls/partitions, modular furniture and other adaptable space configuration/utilization strategies.

Select materials that are recyclable, avoiding composite materials, such as reinforced plastics and carpet fibers and backing. Consider selecting materials and labeling construction materials with identification information to facilitate recycling. Use pre-cut/pre-fabricated materials and use standard lengths and sizes (dimensional modularity) in design. Design facility systems and subsystems for reconfiguration and/or disassembly/recycling using reversible/reusable connectors.

Facility Points Summary

1.0 Sustainable Sites (S)		Score	0	Max 20
1.R1	<input type="checkbox"/> Erosion, Sedimentation and Water Quality Control			[Required]
1.C1	<input type="checkbox"/> Site Selection			2
1.C2	<input type="checkbox"/> Installation/Base Redevelopment			2
1.C3	<input type="checkbox"/> Brownfield Redevelopment			1
1.C4	<input type="checkbox"/> Alternative Transportation			4
1.C5	<input type="checkbox"/> Reduced Site Disturbance			2
1.C6	<input type="checkbox"/> Stormwater Management			2
1.C7	<input type="checkbox"/> Landscape and Exterior Design to Reduce Heat Islands			1
1.C8	<input type="checkbox"/> Light Pollution Reduction			1
1.C9	<input type="checkbox"/> Optimize Site Features			2
1.C10	<input type="checkbox"/> Facility Impact			1
1.C11	<input type="checkbox"/> Site Ecology			
2.0 Water Efficiency (W)		Score	0	Max 5
2.C1	<input type="checkbox"/> Water Efficient Landscaping			2
2.C2	<input type="checkbox"/> Innovative Wastewater Technologies			1
2.C3	<input type="checkbox"/> Water Use Reduction			2
3.0 Energy and Atmosphere (E)		Score	0	Max 28
3.R1	<input type="checkbox"/> Fundamental Building Systems Commissioning			[Required]
3.R2	<input type="checkbox"/> Minimum Energy Performance			[Required]
3.R3	<input type="checkbox"/> CFC Reduction in HVAC&R Equipment			[Required]
3.C1	<input type="checkbox"/> Optimize Energy Performance			20
3.C2	<input type="checkbox"/> Renewable Energy			4
3.C3	<input type="checkbox"/> Additional Commissioning			1
3.C4	<input type="checkbox"/> <<Deleted>>			1
3.C5	<input type="checkbox"/> Measurement and Verification			1
3.C6	<input type="checkbox"/> Green Power			1
3.C7	<input type="checkbox"/> Distributed Generation			
4.0 Materials and Resources (M)		Score	0	Max 13
4.R1	<input type="checkbox"/> Storage & Collection of Recyclables			[Required]
4.C1	<input type="checkbox"/> Building Reuse			3
4.C2	<input type="checkbox"/> Construction Waste Management			2
4.C3	<input type="checkbox"/> Resource Reuse			2
4.C4	<input type="checkbox"/> Recycled Content			2
4.C5	<input type="checkbox"/> Local/Regional Materials			2
4.C6	<input type="checkbox"/> Rapidly Renewable Materials			1
4.C7	<input type="checkbox"/> Certified Wood			1
5.0 Indoor Environmental Quality (IEQ) [Q]		Score	0	Max 17
5.R1	<input type="checkbox"/> Minimum IAQ Performance			[Required]
5.R2	<input type="checkbox"/> Environmental Tobacco Smoke (ETS) Control			[Required]
5.C1	<input type="checkbox"/> IAQ Monitoring			1
5.C2	<input type="checkbox"/> Increase Ventilation Effectiveness			1
5.C3	<input type="checkbox"/> Construction IAQ Management Plan			2
5.C4	<input type="checkbox"/> Low-Emitting Materials			4
5.C5	<input type="checkbox"/> Indoor Chemical and Pollutant Source Control			1
5.C6	<input type="checkbox"/> Controllability of Systems			2
5.C7	<input type="checkbox"/> Thermal Comfort			2
5.C8	<input type="checkbox"/> Daylight and Views			1
5.C9	<input type="checkbox"/> Acoustic Environment /Noise Control			1
5.C10	<input type="checkbox"/> Facility In-Use IAQ Management Plan			

Maximum
Points

Total Score 0 Max 100

SPIRiT Bronze

11

SPiRiT Silver

10

SPIRiT Gold

SPiRiT Platinum

11/11/2016

75 to 100 Points

[illegible]

SPIRiT Comment Sheet

Please forward any comments that you may have on this Sustainable Project Rating Tool, preferably by Email, to:

Mr. Harry Goradia
U. S. Army Corps of Engineers
ATTN: CEMP-ET
441 G Street NW
Washington, DC 20314
Phone (202) 761-7170, FAX (202) 761-0633
Email harry.goradia@hq02.usace.army.mil

SPIRiT Para.

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins or other markings on the paper.

APPENDIX L
SPECIFIC INSTRUCTIONS

Contents:

- Part 1: Section 08700 Builder's Hardware
- Part 2: Specific Instructions – Microstation Drawing Files
- Part 3: Architect Engineer Checklist of Items Governing Design for Arms Vault
Constructed in Accordance with DOD 5 100.76M

PART 1:
Section 08700 Builder's Hardware

SECTION 08700

BUILDERS' HARDWARE

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM E 283 (1991) Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls and Doors Under Specified Pressure Differences Across the Specimen

ASTM F 883 (1997) Padlocks

BUILDERS HARDWARE MANUFACTURERS ASSOCIATION (BHMA)

BHMA L & R Directory (Effective thru Jun 1999) Directory of Certified Locks & Latches

BHMA Closer Directory (Effective thru Jul (1999) Directory of Certified Door Closers

BHMA Exit Devices Directory (Effective thru Aug 1998) Directory of Certified Exit Devices

BHMA A156.1 (1997) Butts and Hinges

BHMA A156.2 (1996) Bored and Preassembled Locks and Latches

BHMA A156.3 (1994) Exit Devices

BHMA A156.4 (1992) Door Controls - Closers

BHMA A156.5 (1992) Auxiliary Locks & Associated Products

BHMA A156.6 (1994) Architectural Door Trim

BHMA A156.7 (1997) Template Hinge Dimensions

BHMA A156.8 (1994) Door Controls -Overhead Stops and Holders

BHMA A156.13 (1994) Mortise Locks & Latches

BHMA A156.15 (1995) Closer Holder Release Devices

BHMA A156.16 (1989) Auxiliary Hardware

BHMA A156.17 (1993) Self Closing Hinges & Pivots

BHMA A156.18 (1993) Materials and Finishes

BHMA A156.19 (1997) Power Assist and Low Energy Power Operated Doors

BHMA A156.20 1996) Strap and Tee Hinges and Hasps

BHMA A156.21 (1996) Thresholds

DOOR AND HARDWARE INSTITUTE (DHI)

DHI Keying Systems (1989) Keying Systems and Nomenclature

DHI Locations for CSD (1997) Recommended Locations for Builders' Hardware
for Custom Steel Doors and Frames

DHI Locations for SSD (1990) Recommended Locations for Architectural
Hardware for Standard Steel Doors and Frames

DHI ANSI/DHI A115.1G (1994) Installation Guide for Doors and Hardware

DHI ANSI/DHI A115-W (Varies) Wood Door Hardware Standards (Incl A115-W1
thru A115-W9)

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 80 (1999) Fire Doors and Fire Windows

NFPA 101 (1997; Errata 97-1; TIA-97-1) Life Safety Code

NFPA 105 (1999) Installation of Smoke-Control Door Assemblies

1.2 SPECIAL TOOLS

Special tools, such as those supplied by the manufacturer, unique wrenches, and dogging keys, shall be provided as required to adjust hardware items.

1.3 WARRANTY

Manufacturer's standard performance guarantees or warranties that extend beyond a 1 year period shall be provided.

1.4 OPERATION AND MAINTENANCE MANUALS

Six complete copies of maintenance instructions listing routine maintenance procedures, possible breakdowns and repairs, and troubleshooting guides shall be provided. The instructions for electro-magnetic closer holder release devices shall include simplified diagrams as installed.

2.1 GENERAL HARDWARE REQUIREMENTS

Hardware for exterior primary entry and exit doors, interior heavy use, heavy weight or security doors shall have grade 1 hardware only. Low use exterior doors and interior doors unless otherwise noted shall have as a minimum grade 2 hardware.

2.2 TEMPLATES

Requirements for hardware to be mounted on metal doors or metal frames shall be coordinated between hardware manufacturer and door or frame manufacturer by use of templates and other information to establish location,

reinforcement required, size of holes, and similar details. Templates of hinges shall conform to BHMA A156.7.

2.3 HINGES

Hinges shall conform to BHMA A156.1. Hinges used on metal doors and frames shall also conform to BHMA A156.7. Except as otherwise specified, hinge sizes shall conform to the hinge manufacturer's printed recommendations.

2.3.1 Hinges for Reverse Bevel Doors with Locks

Hinges for reverse bevel doors with locks shall have pins that are made nonremovable by means such as a set screw in the barrel, or safety stud, when the door is in the closed position.

2.3.2 Contractor's Option

Hinges with antifriction bearings may be furnished in lieu of ball bearing hinges, except where prohibited for fire doors by the requirements of NFPA 80.

2.4 LOCKS AND LATCHES

Locksets for exterior entry doors to barracks modules will conform to BHMA A156.13, function F-13, without stopworks, with key-removable core cylinder. Locksets for all other doors shall be appropriate for application. Deadbolt throw shall be 1 inch. Additional replacement cores and keys will be specified (a minimum of 10 percent of total locksets procured) to allow core interchanges. To the maximum extent possible, locksets, latch sets and deadlocks, and all components thereof, including cylinders and removable cores, shall be the products of a single manufacturer. Lock fronts for double-acting doors shall be rounded. Strikes for wood frames and pairs of wood doors shall be furnished with wrought boxes. Lever handles will be used when required by the Uniform Federal Accessibility Standards as an aid to physically handicapped persons

2.4.1 Mortise Lock and Latch sets

Mortise lock, latch sets, and strikes shall be series 1000 and shall conform to BHMA A156.13, operational Grade 1. Strikes for security doors shall be rectangular without curved lip. Mortise type locks and latches for doors 1-3/4 inches thick and over shall have adjustable bevel fronts or otherwise conform to the shape of the door. Mortise locks shall have armored fronts.

2.4.2 Bored Lock and Latch sets

Bored lock, latch sets, and strikes shall be series 4000 and shall conform to BHMA A156.2, Grade 1. Bored type locks and latches for doors 1-3/8 inches thick and over shall have adjustable bevel fronts or otherwise conform to the shape of the door.

2.4.3 Lock Cylinders (Mortise, Rim and Bored)

Lock cylinders shall comply with BHMA A156.5. Lock cylinder shall have not less than six pins except seven pins will be provided for barracks doors. Cylinders shall have key removable type cores. A master keying system shall be provided. An extension of the existing keying system shall be provided.

The cylinders shall be compatible with existing locks that were manufactured by Best, have interchangeable cores and have a E type keyway. Construction interchangeable cores shall be provided. Disassembly of knob or lockset shall not be required to remove core from lockset. All locksets and lockable exit devices shall accept same interchangeable cores.

2.4.4 Hasps

Hasps shall conform to BHMA AI56.20.

2.4.5 Lock Trim

Lock trim shall be cast, forged, or heavy wrought construction of commercial plain design. In addition to meeting the test requirement of BHMA AI56.2 or BHMA AI56.13, knobs, lever handles, roses, and escutcheons shall be 0.050 inch thick, if unreinforced. If reinforced, the outer shell shall be 0.035 inch thick and the combined thickness shall be 0.070 inch except that knob shanks shall be 0.060 inch thick. Knob diameter shall be 2-1/8 to 2-1/4 inches. Lever handles shall be of plain design with ends returned to no more than 1/2 inch from the door face.

2.5 EXIT DEVICES AND EXIT DEVICE ACCESSORIES

Exit devices and exit device accessories shall conform to BHMA AI56.3, Grade 1.

2.5.1 Exit Devices and Auxiliary Items

Trim shall be of wrought construction and commercial plain design with straight, beveled, or smoothly rounded sides, corners, and edges. Adjustable strikes shall be provided for rim type and vertical rod devices. Open back strikes shall be provided for pairs of doors with mortise and vertical rod devices; except open back strikes shall be used on labeled doors only where specifically provided for in the published listings. Touch bars shall be provided in lieu of conventional crossbars and arms. Escutcheons shall be provided not less than 7 by 2-1/4 inches. Escutcheons shall be cut to suit cylinders and operating trim.

2.5.2 Door Coordinator

Door coordinator with carry bar shall be Type 21 and shall be provided for each pair of doors equipped with an overlapping astragal. The coordinator may be gravity or mechanically operated and shall be capable of holding the active door of a pair open until the inactive door has preceded it in the closing cycle. When used as fire exit hardware, the coordinator and carry bar shall be listed or labeled by a nationally recognized independent testing laboratory.

2.5.3 Removable Mullions

Removable mullions shall be Type 22 of the box type and shall be used only with those exit devices for which the mullions were manufactured. Mullions shall be furnished with mullion stabilizers of the same manufacturer.

2.5.4 Automatic Flush Bolts

Automatic flush bolts shall be Type 25 in accordance with BHMA A156.3, and shall be installed at the top and bottom of the inactive leaf of pairs of fire rated doors where specified in the hardware sets. Flush bolts shall be mortised in the strike edge of the door.

2.6 KEYING

Locks shall be keyed in sets or subsets as scheduled. Locks shall be furnished with the manufacturer's standard construction key system. Change keys for locks shall be stamped with change number and the inscription "U.S. Property- Do Not Duplicate." Keys shall be supplied as follows:

Locks

3 change keys each lock

Master key sets

2 keys each set

Construction keys

2 keys total

Blank keys

500 total

The keys shall be furnished to the Contracting Officer arranged for key control system storage in sets or subsets as scheduled.

2.6.1 Manufacturing and Installation

Permanent core control keys, grand masters, masters, or any submasters will be sent to the PWBC locksmith by registered mail. Keying will be done by the manufacturer. Contractor is required to use a registered locksmith who has a minimum certification of Certified Register Locksmith (CRL) certified by the Associated Locksmiths of America to install all lock and key systems procured for the contract. The keying schedule must be submitted through the Contracting Officer to the PWBC Project Manager. The PWBC Real Property Planning Team will then assure the review of the keying schedule by both the PWBC key shop and the facility using service for compatibility and function. The bitting list, which includes the type of keying systems used and the actual identification of key cuts and codes, shall be sent by registered mail to the PWBC key shop. A copy of the approved keying schedule which identifies individual keys for each door/lock, shall accompany the bitting list. The Contractor will change out all construction cores before final inspection and all keys will be inserted in the locks before final inspection. The Contractor will surrender all external keys to the construction agency representative after all work is accomplished and they will be transferred to PWBC with DD Form 1354. No beneficial occupancy date will be authorized until the above requirements are completed.

2.7 DOOR CLOSING DEVICES

Door closing devices shall conform to BHMA A156.4, Grade 1. Closing devices shall be products of one manufacturer for each type specified. The opening resistance of closing devices shall not exceed 67 N 15 lbf applied at the latch stile or exceed 22 N 5 lbf where low opening resistance is scheduled. Closing devices for doors required to be accessible to persons with disabilities shall be noted as "Low Opening Resistance".

2.7.1 Surface Type Closers

Surface type closers shall be Grade 1, C02000 Full Cover with options PT-4H, I; Size 1 or 2 through Size 6, and PT-4D with back check position valve. Except as otherwise specified, sizes shall conform to the manufacturer's published recommendations. Closers for out swinging exterior doors shall have parallel arms or shall be top Jamb mounted. Closers for doors close to a wall shall be of narrow projection so as not to strike the wall at the 90-degree open position.

2.8 DOOR CONTROLS - OVERHEAD HOLDERS

Door controls - overhead holders shall conform to BHMA A156.8.

2.9 SMOKE DETECTORS AND ELECTRO-MAGNETIC HOLDERS

Door closers with integral hold-open device shall conform to BHMA A156.15 and shall release the door upon activation of the building fire alarm system or interruption of electric power.

2.10 ARCHITECTURAL DOOR TRIM

Architectural door trim shall conform to BHMA A156.6.

2.10.1 Armor Plates

Armor plates shall be Type J101 stainless steel, 36 inches in height, and 2 inches less in width than the width of the door for single doors and 1 inch less for pairs of doors. Edges of metal plates shall be beveled. Where the door has a louver panel, the armor plate shall be omitted if top of louver frame is more than 20 inches above the bottom of the door. I

2.10.1.1 Kick Plates

Kick plates shall be Type J102 stainless steel. Width of plates shall be 2 inches less than door width for single doors and 1 inch less for pairs of doors. Height shall be 16 inches, except where the bottom rail is less than 16 inches the plate shall extend to within 1/2 inch of the panel mold or glass bead. Edges of metal plates shall be beveled.

2.10.1.2 Mop Plates

Mop plates shall be Type J103 stainless steel. Width of plates shall be 2 inches less than door width for single doors and 1 inch less for pairs of doors. The height shall be 4 inches. Edges of metal plates shall be beveled.

2.10.2 Push Plates

2.10.2.1 Flat Plates

Flat plates shall be Type J301 0.50-inch thick stainless, size 6 inches by 16 inches. Edges of metal plates shall be beveled.

2.10.2.2 Door Pulls

Door pulls shall be Category J400 stainless steel of plain modern design. Pulls for hollow metal, mineral core wood or kalamein doors shall be Type J405 thru-bolted to Type J301 flat push plates.

2.10.3 Push and Pull Bars

Push and pull bars shall be Category J500, stainless steel. Edges of mounting plates shall be beveled.

2.11 AUXILIARY HARDWARE

Auxiliary hardware, consisting of door holders and door stops shall conform to BHMA AI56.16. Lever extension flushbolts shall be Type L14081. Dust-proof strikes shall be Type L04011 for doors that are not fire rated. Dust-proof strikes shall be Type L04021 for fire rated doors.

2.12 MISCELLANEOUS

2.12.1 Metal Thresholds

Thresholds shall conform to BHMA AI56.21. Thresholds for exterior doors shall be extruded aluminum and shall provide proper clearance and an effective seal with weather stripping. Latching thresholds shall be of such height that the bottom of the door shall be 1/8 inch over the tread of the threshold and 1/8 inch below the top of the stop. Where required, thresholds shall be modified to receive projecting bolts of flush bolts or exit devices. Thresholds for doors accessible to the handicapped shall be beveled with slopes not exceeding 1:2 and with heights not exceeding 1/2 inch. Air leakage rate of weatherstripping shall not exceed 0.5 cubic feet per minute per lineal foot of crack when tested in accordance with ASTM E 283 at standard test conditions.

2.12.2 Rain Drips

Extruded aluminum, not less than 0.07 inch thick, painted. Doorsill rain drips shall be 1-1/2 inches to 1-3/4 inches high by 5/8 inch projection. Overhead rain drips shall be approximately 1-1/2 inches high by 2-1/2 inches projection and shall extend 2 inches on either side of the door opening width.

2.12.3 Aluminum Housed Type Weatherseals

Weatherseals of the type indicated shall consist of extruded aluminum retainers not less than 0.07 inch wall thickness with vinyl, neoprene, silicone rubber, polyurethane or vinyl brush inserts. Aluminum shall be clear (natural) anodized. Weatherseal material shall be of an industrial/commercial grade. Seals shall remain functional through all weather and temperature conditions. Air leakage rate of weatherstripping shall not exceed 0.5 cubic feet per minute per lineal foot of crack when tested in accordance with ASTM E 283 at standard test conditions.

2.12.4 Gasketing

Gasketing shall be a compression type seal, silicon based, self-adhesive product for use on steel doorframes with wood or steel doors fire rating as required. Color shall be bronze. Air leakage rate of weatherstripping shall not exceed 0.775 liter per second per lineal meter 0.5 cubic foot per minute per lineal foot of crack when tested in accordance with ASTM E 283 at standard test conditions.

2.12.5 Key Control Storage System

Key control storage system shall conform to BHMA A156.5, Type E8352, capacity as required, and shall be properly labeled for key identification. Set up, identification labeling and location of the key control storage shall be as directed at the predelivery conference.

2.12.6 Door Stops

Wall stops, floor stops and combination stop and holders shall conform to BHMA A156.16.

2.13 FASTENINGS

Fastenings of proper type, size, quantity, and finish shall be supplied with each article of hardware. Machine screws and expansion shields shall be used for attaching hardware to concrete or masonry. Fastenings exposed to the weather in the finished work shall be of brass, bronze, or stainless steel. Sex bolts, through bolts, or machine screws and grommet nuts, where used on reverse-bevel exterior doors equipped with half-surface or full-surface hinges, shall employ one-way screws or other approved tamperproof screws. Screws for the jamb leaf of half-mortise and full-surface hinges attached to structural steel frames shall be one-way or other approved tamperproof type.

2.14 FINISHES

Finishes for all exposed hardware shall conform to satin stainless steel as identified in BHMA A156.18.

2.15 HARDWARE FOR FIRE DOORS

Hardware for fire doors shall conform to the requirements of NFPA 80 and NFPA 101.

--End of Section --

PART 2:
Specific Instructions – Microstation Drawing Files

FY 2003 PROGRAM
PROJECT NUMBER: 43908

SPECIFIC INSTRUCTIONS
SOF Weapons Storage and Maintenance Facility
FORT BRAGG, NORTH CAROLINA

1. The firm will use the A/E/C/ CADD Standard Release 1.8 as prepared by the CADD/GIS Technology Center. The web site for this standard is <http://tsc.wes.army.mil>.
2. On the civil plans label all structures with a building number. Even when they are scheduled for demolition.
3. The border sheet should be completed at the CATEGORY CODE area with the **442-23-01**.
4. The data fields in the border sheet should be used for all title entry. Also these data fields should be used as guidance for the size of other text within the body of the drawing.
5. All drawing files having to do with:
 - civil work (work outside the 5' line of the buildings) begins with these characters – **BEH**-----file extension
 - WEAPONS STORAGE BUILDING begins with these characters _ **BEI**-----file extension
 - MAINTENANCE FACILITY Building begins with these characters _ **BEJ**-----file extension
6. All files will have an eight , three file name length.
7. Please refer to the little guidance booklet prepared by Savannah District personnel for file name guidance (TRI_SERV.PPT).
8. All CD's submitted for review must be labeled the review phase and the complete project name. Also this reference number should be placed on the CD submittals (this can be hand written) **BR918**.
9. All files will be prepared with or completely compatible with MicroStation latest version. At each review the design files will be submitted. At the 100% design submittal .CAL files of each drawing will also be submitted for Electronic Bid Set preparation. Nancy Traywick is your POC for EBS submittals (912)652-5853.
10. The use of model (reference files) files is strongly encouraged because it makes changes and revisions so much more complete. When you change the model file, the other files are updated at the same time because they reference the model file.
11. Please get with Spatial Engineering Section for the latest border sheets before you begin design. There are two sets of border sheets. One is for English unit designs and the other is for metric. Your COE Project Manager will know which units this design should use. Have this information ready when the border sheets are requested.
12. Call Nancy Traywick or Susan Usher if you have questions. 912-652-5853 or 912-652-5120.

***3**

1. On the border sheet Edit the column heading "FILE NO." to read "FILE NAME". Then add the electronic active file names beside the drawing titles. NEW REQUIREMENT.

2. Ft Bragg has very strict guidelines for the Civil design drawings. North Must be to the top of the drawing. Further design MUST be reoriented.

3. Ft Bragg has issued guidance stating that survey datum must be NAD 83 North Carolina State Plane Coordinate System. Ft Bragg is adamant about this and will return work not designed to fit the master plan electronically.

Fort Bragg Guidelines for Civil Design drawings:

The contractor shall provide a pre-work map prior to site disturbance:

1. A single map of the entire site indicating the location of all existing and proposed utilities and other constructions to include the footprint of structures, paving (including curbing), sidewalks, and other relevant planimetric features.
2. The map will be registered to the North Carolina State Plane Coordinate System – Zone 3200 – NAD83 -- U.S. Survey Feet. Elevation units will be MSL GRS80 U.S. Survey Feet.
3. Due north on the map will be as viewed from the bottom of the map. Rotations will not be allowed nor will orientation to Magnetic North.
4. The map will contain a labeled coordinate grid with spacing appropriate to the map extents. For instance, a map scale of 1"=30' will have coordinates labeled at 100' intervals north/south and east/west.
5. A minimum of four tie-in points will be labeled on the map located near the four corners of the map. The tie-in points will show a symbol at the location of the point and a label indicating the Northing and Easting of each point.
6. All utilities on the map will be clearly labeled as to size and material. Where utilities are to be enclosed in conduits or duct work, a section of the duct will be shown clearly indicating the dimensions and material of the duct, the contents of the duct such as wire size and type of conductor, whether conductor is primary or neutral, number of conductors, hot water supply or return, pipe size, insulation type and thickness, etc.
7. The map will show the invert elevation of all manholes as well as the invert of each pipe joining a manhole as well as the invert and character of all outfalls.

The contractor shall modify the pre-work map at construction completion to indicate the as-built character of all site components:

1. This map will conform to the specifications of the pre-work map and be free of any superfluous construction detail. The intent is to show As-Built conditions and should not include any components that are not as-built, i.e., if the pre-work map showed a water line 3' from a curb and was constructed 4' from the curb, the as-built map will show only the final location of the water line.
2. The map will clearly indicate the final grade of the site at a contour interval not greater than one foot.
3. The final inverts of all utilities will be shown. Where utilities were installed which follow the surface of the ground, the depth of that utility will be indicated. Where there is a variance in the depth of the utility, the break point and character of variance will be shown.
4. The map will clearly show any utilities installed with a trace wire and/or cathodic protection.
5. The map will show a minimum of two tie points for all subsurface control devices to include valves, manholes, handholes, switches, etc. The tie-points will be directed such that they form a triangle with no inclusive angle less than 30° or greater than 150°. No leg of the triangle will be longer than 100'. Valid tie-points will run to

identifiable above ground objects such as poles or building corners as is in keeping of good survey practice for the recovery of monuments.

6. The map will clearly indicate the entry point and character of all utilities running to or from structures.

PART 3:
Architect Engineer Checklist of Items Governing Design for
Arms Vault Constructed in Accordance with DOD 5 100.76M

The enclosed Architect Engineer Checklist describes the requirements for a standard 8" thick concrete wall vault system. Based on the threat analysis described in section 01010 paragraph 21.6.1, vaults in this project are required to be 24-inch thick reinforced concrete walls. Coordination with the qualified engineer personnel that will verify the structural composition of the vaults needs to occur for this change in wall thickness.

**ARCHITECT ENGINEER CHECKLIST FOR ITEMS
GOVERNING DESIGN FOR ARMS VAULT
CONSTRUCTED IN ACCORDANCE WITH DOD 5100.76M**

Base No.	FY	Contract
Project	L.I.	
Firm Name	Date	
	Yes	No
A. FLOORS:		N/A
1. 6-inch thick concrete slabs reinforced with 6x6-W4xW4 mesh.	---	---
2. 6-inch thick concrete slabs reinforced with steel bars (floor forms the ceiling of underlaying room or area).	---	---
3. 2-inch concrete topping over existing floor slab.	---	---
4. Existing slabs removed and replaced with new 6-inches of reinforced concrete.	---	---
B. WALLS:		
1. 8-inch concrete reinforced with No.4 bars at 9-inches on center in each direction and staggered on each face to form a grid approximately 4-1/2 inches square.	---	---
2. 8-inch concrete masonry units with No. 4 bars threaded through masonry units cavities at 8 inches o.c. with all cells filled with mortar or concrete, and horizontal joint reinforcing required at every course.	---	---
3. 8-inches of brick interlocked between inner and outer courses.	---	---
4. Existing walls: New 8-inch reinforced (inner) (outer) walls constructed against existing walls.	---	---
C. CEILING:		
1. 8-inch) concrete slab reinforced with No. 4 bars minimum, and forming a grid where the area of any opening does not exceed 96 square inches.	---	---
2. Concrete Pan Joist: Thinnest portion of joist not less than 6-inches and the clear space between joist not exceed 20-inches. Reinforcing bars spacing form a grid where the area of any opening does not exceed 96 square inches.	---	---
3. _____inch concrete topping provided over existing concrete ceiling slab. Reinforcing bars spacing from a grid where the area of any opening does not exceed 96 square inches.	---	---
D. DOORS:		
1. Doors provided to Arms Vault. Each door 1-3/4-inch thick solid wood core with 12-gauge metal plate securely attached to outside face. (Chapter 4, paragraph B.1.a.(4)(a) of DOD 5100.76-M).	---	---
2. Doors provided to Arms Vault. Doors shall be 1-3/4-inch thick hollow metal industrial type internally reinforced vertically with continuous steel stiffeners spaced 6-inches	---	---

maximum on center. Minimum thickness or skin plate of doors is not less than 14 gauge.

3. One Class 5 steel vault door (Fed. Spec. AA-D-600B) with a built-in three position dial-type changeable combination lock used in lieu of door described above.

E. ARMS PASS WINDOW DOORS:

Pass window openings provided protection in accordance with Chapter 4, paragraph (5)(a) 1., 2., 3., of DOD 5100.76-M.

F. DOORS AND PASS WINDOW FRAMES:

Frames are designed in accordance with Chapter 4, paragraph b.(4)(a) 1., of DOD 5100.76-M.

G. HARDWARE FOR DOORS:

1. LOCKS (Chapter 4, paragraph B.1.a.(8) DOD 5100.76-M.

a. Door provided with a high security locking device.

b. Door provided with a high security hasp and padlock.

2. Door hinges are (fixed-pin security type) (safety-stud hinges) (with hinge pins spot welded) to prevent removal.

3. Hinge mounting screws not exposed to the outside of the Arms Rooms.

H. OPENINGS (walls or ceilings):

1. No openings required in walls or ceilings.

2. All openings greater than 96 square inches protected by a rod-and-bar grid as prescribed in Chapter 4, paragraph (5)(a) 1., 2., and 3., of DOD 5100.76-M.

I. ARMS ROOM ANCHOR RINGS:

Anchor rings provided at Arms Room walls to secure arms racks.

Anchor ring size, mounting height and spacing indicated on drawings.

J. SECURITY LIGHTING:

Interior entrances to Arms Rooms illuminated a minimum of 0.10 foot candle at any point within a 20-foot radius of the entrance.

K. INTRUSION DETECTION SYSTEM:

Intrusion alarm detection system provided for vault(s) as required in Chapter 3, paragraph F., of DOD 5100.76-M.

List any waivers, unusual requirements and additional features provided.

(Attach additional pages if required)

CERTIFICATION OF COMPLIANCE WITH CRITERIA SET FORTH IN DOD 5100.76-M

AE CONTRACTOR RESPONSIBLE FOR DESIGN: